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ABSTRACT Eight conference papers on early childhood education give a philosophical overview to the instruction of young children. Contents include a presentation by Edward W. Martin on a new outlook for early education of handicapped children and a report by Mrs. Betty Dubnoff on the case for early identification and intervention. Other presentations include a discussion on the rationale for early identification by Bettye M. Caldwell, the rationale and curriculum framework for an infant education system by John Meier and Leslie Segner, and a review of various studies of Head Start Programs through a historical perspective by James S. Payne, Walter J. Cegelka, and John O. Cooper. The utilization of Piaget's theory of cognitive development is treated by Mortimer Garrison, Jr. Information is given on thoughts and concerns on the basic psychological needs in infancy and early childhood by Povl. W. Toussieng, and Marshall D. Schechter presents a conceptual model for understanding and dealing with perceptual problems. (WW)

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Exceptional Children Conference Papers:
Early Childhood Education - An Overview

Papers Presented at the
Special Conference on Early Childhood Education
The Council for Exceptional Children
New Orleans, Louisiana
December 10-13, 1969

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Preface

Early Childhood Education - An Overview is a collection of 8 papers selected from those presented at the Special Conference on Early Childhood Education, New Orleans, Louisiana, December 10-13, 1969. These papers were collected and compiled by The Council for Exceptional Children, Arlington, Virginia. Other collections of papers from the Conference have been compiled and are available from the ERIC Document Reproduction Service. Other collections announced in this issue of Research in Education may be found by consulting the Institution Index under Council for Exceptional Children or the Subject Index under Exceptional Child Education. Titles of these other collections are:

Curriculum, Methods, and Materials in Early Childhood Education Programs
Environmental Influences in the Early Education of Migrant and Disadvantaged Students
Training and Personnel in Early Childhood Education Programs
Parent Participation in Early Childhood Education

Early Education: A New Outlook for Education of Handicapped Children

Edwin W. Martin
Acting Associate Commissioner
Bureau of Education for the Handicapped
Washington, D. C.

EARLY EDUCATION: A NEW OUTLOOK FOR EDUCATION OF HANDICAPPED CHILDREN

Next week I will have the opportunity to present testimony before the Select Education Subcommittee of the House of Representatives on the subject of this conference - Early Education for Handicapped Children.

The Subcommittee, chaired by Congressman John Brademas is holding hearings on the Comprehensive Preschool Education and Day Care Act of 1969, H.R. 13520. It is the general feeling in Washington that the Brademas bill will provide both the talking point and perhaps a fundamental basis for a Federal support program for comprehensive early education activities that will in the next decade become as much a part of the American education experience as elementary and secondary education is today. President Nixon has called for increased attention to the first five years of a child's life, and across the nation there are evidences of tremendous interest in Early Childhood Education, this conference being one prime example.

Early Education for Handicapped Children is not just a downward extension of elementary education to children of an earlier age. It is an endeavor and a field of study in itself, with its own values and goals as an entity and a raison d'etre outside of preparation for education programs which will come later. We need not call it "preschool", "pre-kindergarten", or "pre-anything". It is adequate and sufficient to call it "early childhood education", and to refer to programs as "early education programs."

Early education of handicapped children is a major contributor to the field of education for the handicapped as a whole, and it is about some of these contributions which I will talk today. These are contributions which will lead us together toward a New Outlook for the Education of Handicapped Children.

Prevention of Handicaps

60% of America's handicapped children are not receiving appropriate special education services. Not all need be served by special classes in elementary or secondary schools. Early education leads directly to a concern for the preventive aspects of special education. Early intervention may prevent or reduce the severity of handicapping conditions. This approach can result in great economies, great educational gains, in addition to its obvious morality. Examples of failure to intervene are familiar to all of us. The results of not talking to the child who cannot hear well on the assumption he is deaf and of reducing visual stimulation to the child who cannot see well can be devastating to the child's potential for learning. Studies suggest that deprivation of sensory experiences in the early period of life may leave the sensory systems with irreparable physical inadequacies, multiplying the severity of the original impairment which led to the reaction of reducing stimulation. Similarly,language learning in deaf children, left to chance until school age seems never to recover its normal sequencing and characteristics. Early intervention through education of the parents, through the judicial use of hearing aids and glasses, and through sensory training can prevent or reduce this increasing of the sensory and language handicapping conditions. Parallels in the area intellectual functioning are well known.

Early education may similarly help to prevent secondary emotional handicaps from occuring. The child's own reaction to his handicapping condition and his interpretation of the reaction of the people in his environment may lead to feelings of inadequacy, unworthiness, or even persecution. Such a situation is conducive to the development of emotional disturbance in addition to, perhaps even more severe than, the initial handicapping condition. Early intervention through reducing the effects of the original handicapping condition, through supportive therapy, or through changing the attitude and reaction of people in his environment may avoid this compounding of the child's overall handicapping condition.

Early education may also lead to avoiding a handicap when there is a physical impairment present. Learning to use a prosthesis effectively or learning appropriate compensatory behavior at an early age may significantly reduce the disability and avoid an operational handicap for some children.

Vigilance for the prevention of handicaps leads us also to a confrontation with a handicapping condition which may be aggravated in some instances by special education itself. We must increasingly question the practice of labeling the child first as "handicapped" and second as having a particular category of handicap, as a necessary beginning point for individualizing instruction or providing related special education. It seems likely that labeling a child "handicapped" frequently sets in motion the dynamics of a self-fulfilling prophecy, in which the child, treated as handicapped, becomes more handicapped because of this treatment. Historically, we have observed the negative effects of calling a hearing impaired child "deaf", and seen reduced expectancy for his performance, reduced acoustic stimulation, and preferential treatment by adults. By delineating discrete areas of handicap and labeling a child with one of these areas, such as deaf, blind, mentally retarded or emotionally disturbed, we tend to direct his education program in limited channels, sometimes excluding him from programs with a broader scope. We may focus primarily on remedial rather than developmental educational approaches. The label, once applied, may also stay with him throughout his education or his life, even though the handicapping condition has been overcome or greatly improved. This problem is reaching critical dimensions in relation to mental retardation and emotional disturbance as labels used to describe black children - and children of other minority groups. Rigidity of classification and of specific treatment by disability is less prevalent in early childhood programs and may well impact on later elementary and secondary programs.

Merger of Educational and Clinical Roles

A second major contribution of early education is the realignment and bringing together of the roles of educators and clinicians. Early education programs for language impaired and hearing impaired children have frequently been developed in hearing and speech centers, adding an educational component to what had been previously only a clinical activity or perhaps an intuitive but non-sophisticated education program. Hospitals are becoming concerned about early prevention of handicaps and the educational problems of their very young children, and are developing early education programs housed in medical centers. Conversely, school systems are beginning to develop clinical resources within the school setting to provide needed services medical, psychological, and speech and hearing closely coordinated with the classroom. Early education can lead in bringing these specialties closer together.

This willingness of the schools to offer comprehensive services will be critically important if education is to have a chance to be the major source of preschool and early childhood activities. Much of the impetus for placing such programs outside of school settings has been based upon the historical pattern of non-availability of comprehensive service in the school setting or under school auspices.

The blending of clinicians and teachers has provided new emphasis on diagnostic teaching, on the identification of individual learning styles and characteristics. Much of what transpires in early education programs for handicapped children is a combined evaluative education process, in which diagnoses is seen as a continuing rather than static process.

The Role of Parents in Education

The early education of handicapped children is also serving to recognize the important role of the parents in the process of education. For too many years,parents have been kept out of the critical activities of education or have been detoured onto the backroads of bake-sales and Parent-Teacher Association meetings. The price is now being paid for this exclusion may be related to growing loss of confidence in the schools, and to inadequate local support for new tax rates and bond issues. In our inner cities, we have seen increasing evidence of misunderstandings, outright revolt and demands for greater involvement by parents. Early education programs have led in the recognition of the advantages and the necessity of involving parents and other family members in instruction, because of the greater proportion of time very young children spend at home than at school.

Under the Handicapped Children's Early Education Assistance Act, approved projects have been designed to encourage active participation of parents in program activities, such as planning and policy making, evaluation, development of materials, and dissemination of information about the program. They are not limited to participation in parents' groups, although this type activity is usually a valuable part of a total program. Early education may lead the way toward further defining an active role for parents at all levels of special education.

Expanding the Educational Setting

In addition to increasing the involvement of parents, early education leads to our own involvement in an expanded education environment. The home and the neighborhood become part of the instruction arena as well as the clinic or classroom. Teachers may go into the real home or provide a surrogate home for the primary educational setting. In addition, educational procedures and educational technology may be part of the at home program.

The child's health, his nutrition, and the emotional climate of his environment are all important ingredients of the expanded setting necessary for comprehensive early education. With these new dimensions, new ways to deliver comprehensive services in this expanded setting must be found.

Expansion of the educational setting poses numerous problems for professional educators trained and experienced in a program centered around the classroom. We may be asked to do such tasks as counseling and evaluation, be concerned with health, enter the neighborhood and the home, meet family members, and many other things that were not part of our original training. We may find ourselves in the role of private confidant to a parent, coordinator of ancillary professional services, manager of aides and volunteers--roles typically above, below and beyond the call of the classroom duty.

The traditional bounds of the teacher's intervention into the child's life are no longer valid. The early education setting is as big as the life of the handicapped child.

Cooperation Among Agencies and Professions

Effective education and habilitation of very young handicapped children is expensive, it poses complex problems, and it requires more services than are typically found within a single agency or profession. These factors force the interaction and cooperation of agencies and professions often unfamiliar to each other. Public and private agencies, state and local agencies, large and small agencies may find themselves for the first time in a joint endeavor for the young handicapped child. They may have to learn to deal with traditional institutional rivalries, jealousies, and suspicions. Interacting classroom teachers, psychologists and rehabilitation workers, social workers and physicians may find difficulty in sorting through parochial nomenclature, understanding each others patterns of service, and crossing professional barriers of certification and standards in order to give appropriate interdisciplinary services to young handicapped children.

New systems of administration may have to be developed to effectively utilize the pluralistic treatment program of the young child. New patterns of cooperation among local, State, Federal and private agencies is indicated. Early education programs, by attempting to meet the multiple needs of young handicapped children, may help bring about a new spirit of cooperation and system of interaction which can benefit all handicapped children. While it is not clear that the schools will emerge as the central or coordinating link in such cooperative programs, the schools seem to me to be potentially our best organizational public system for such a role.

Renewal of the Education System

One of the most significant contributions early education can make to the education of all handicapped children is provision of an atmosphere and an opportunity for renewal and revitalization of the education system. John Gardner, in his treatise on Self-Renewal, describes the necessity for an individual or a society to be able to renew itself through organizing for free expression and experimentation, through rewarding creativity and innovation, and through welcoming and protecting dissent. Our system for giving educational services to handicapped children needs renewal also. Early Education offers that opportunity of a new outlook for special education. I have been questioned about supporting early education programs in non-school settings in addition to those we do support in schools. It is based primarily on the experimental and developmental nature of our program. We are at a learning stage still relatively free from the traditions of the education establishment, early education seeks not just to adapt procedures for older children, but to place a whole new foundation under the learning and teaching process or our schools. The process of placing a new foundation under an old structure may crack some ancient plaster, shatter some hallowed windows, and bend some traditional walls. Dissatisfaction with the result may even call for some serious and constructive remodeling to the whole superstructure. Already research results suggest that the educational program of the early grades must be modified if preschool gains are to be maintained.

Early eduation will involve new professionals in the important task of helping handicapped children. Physicians, child development specialists, sociologists, linguistics, general educators, experimental psychologists, audiologists, geneticists--to name some that have seldom before interested themselves in education of handicapped children are now appearing in our programs and contributing to our conferences. This infusion of new blood carries a promise not only of greater strength, but of broader perspective, new assumptions, and has broadened the spectrum in looking at children and their development.

Early education has opened up new bodies of knowledge to the educator of handicapped children. Our "literature" is now spread over the journals of a dozen fields, and it even appears in popular magazines. New ways of gathering information are emerging through multi-dimensional, inter-disciplinary studies of handicapped children. Our knowledge is growing and our potential for new knowledge is unlimited.

But more important than new knowledge is an atmosphere of renewal that early education brings with it. As yet lacking the mystique of a very "special" endeavor, and still without the incontestable sanctity of a crusade, early education brings with it an atmosphere of healthy skepticism--a skepticism for techniques, for approaches, and even for the very concept of early education itself. As a result, evaluation of the process and results of our endeavors is becoming a vital and an integral part of early education programs.

A new spirit of temporal urgency pervades early education for handicapped children. Concern for cost efficiency, for prevention of secondary handicaps, and for early reduction of handicapping conditions prescribes that children not only be identified and started on education as early as possible, but that they receive effective education before reaching a certain age. This urgency leads to a search for the most efficient means of education possible to be given during the limited time period available. The concept of attempting to reach goals for specific and restricted time frames is one that has not been common in special education for older handicapped children. It holds promise for helping us to shape realistic and demonstrable goals in the future for all our special educational programs.

Early education may also lead to a renewal of the terminology used in our field as I suggested earlier. Programs for early education of handicapped children are questioning the traditional categories of handicaps applied to children. They are looking rather for functional categories which will describe the child's behavior and have relevance for instructional approach. Of the more than 200 proposals for support of projects under the Handicapped Children's Early Education Assistance Act this year, over half of the applicants chose to describe their population of handicapped children in other than the traditional categories, or were intending to mix children of different categories in the same program.

One final area of potential impact of early education that I feel very strongly about, lies in development of a true national commitment to education for handicapped children. I mentioned before that only about 40% of our nation's children are receiving appropriate special educational services. Yet our national government has felt a responsibility for handicapped citizens. We now spend 1.2 billion annually for welfare payments for the disabled. The grants to States for rehabilitation of 16 year old and older handicapped persons exceed $500 million, 1/2 billion. Yet our basic support for educational services to handicapped children in the schools, Title VI-A of the ESEA is only 30 million and the total Federal support including teacher training, research, Vocational Education, Title III, etc. is about 150 million or $25-$30 dollars per child. While this has more than quadrupled since our Bureau was created only 3 years ago, it is still pitifully little.

But there is great public support for preschool activities, and we are drawn here by our great hope and faith in the efficiency and effectiveness of early education. As early education succeeds it will help make our case, create a new demand for additional services in elementary and secondary schools.

In a few days, we will move into a new decade, the 1970's. This is a time to take stock of what we have done, where we are in special education, and consider where we are going and where we could go. In the decade ahead, we must not only allow nonconformity and permit dissension, we must encourage creativity and reward innovation. We must not be afraid to question our methods and techniques, and even our basic assumptions about education. We have an opportunity now for a New Outlook in education for handicapped children and we have the opportunity for some major breakthroughs during the coming decade. Early education can lead the way to this New Outlook and to these breakthroughs.

I look forward to these next few days and I can assure you the staff of the Bureau of Education for the Handicapped stands ready to continue its partnership with the field in this joint effort for the decade ahead.

THE CASE FOR EARLY CHILDHOOD EDUCATION

By: Mrs. Belle Dubnoff, Director
Dubnoff School for Educational Therapy
10526 Victory Place
North Hollywood, Calif. 91606
Phone: 877-5678

During the past few years, a trend has developed throughout the nation which may change many of our prior concepts as to education. Although teachers had been aware that there was something wrong with many of their kindergarten and first grade children, there had been no appreciation of how this "something wrong" came about. Throughout the nation, psychologists, educators, linguists and others are beginning to work backward to younger and younger ages trying to seek some answers. The field of early learning has been neglected because the child, from birth to three years of age, seemed so inaccessible.

The case for early identification and intervention will be presented in this paper by a short summary of the research being done. Dr. Benjamin S. Bloom of the University of Chicago, published a book called "Stability and Change in Human Characteristics." This book presented statistics based on a thousand studies of growth, following up certain children and measuring them at various points in their development. Dr. Bloom emphasized that the child's environment exercises a strong impact on a developing characteristic, especially during that characteristic's period of most rapid growth. For example, human intelligence grows most rapidly before the age of four. This then becomes the time when the environment can influence it most easily. As time goes on, Dr. Bloom emphasized, more and more powerful forces are required to produce a given amount of change in a child's intelligence.

Most of the emphasis has been placed on the differences between the children of the poor and the affluent. By Kindergarten age, there is a difference of up to fifteen points between the I.Q.'s of the poor and those from middle class parents. The Head Start Programs were providing evidence that it was not easy to bridge that gap, especially the verbal abilities gap at that stage. President Nixon announced that "Head Start must begin earlier in life and last longer to achieve lasting benefits." This pointed the way to those of us who have long felt that the first three years of life can largely determine a human being's future competence. Concentration must be placed on asking those questions and seeking those answers that might best help us work more effectively in attaining the goal that each child would obtain optimal development. These questions and the hope for answers should be aimed at helping all children - black and white, poor and rich, handicapped physically and mentally.

The experimental work that is being done at Harvard by La Crosse has been focusing on gathering information on children's activities as related to their development and to their mother's behavior. These researchers have found that different types of mother-child interaction produce different types of children. Those differences cut across class lines and color lines, with the central tendency favoring the middle-class child, both black and white. The middle class child spends fifty percent more time constructing things or practicing skills which give a sense of mastery and, therefore, help to build up his ego.

Dr. Burton White at Harvard startled the world with his findings that infants just a few days old were able to focus on and track a moving target at about 7½ inches from their eyes. The pattern of eye-hand development was found to be remarkably plastic and could be speeded up considerably by enriching the baby's environment. With enrichment, he found that in less than one month, they learned how to reach out and grasp accurately - a skill that took control babies three months to develop. Dr. White showed to what a great extent "developmental landmarks" in early childhood can be speeded up by enriching the environment. Relatively small changes resulted in changes "of striking magnitude" and show that a child can learn more and wants to learn more from his environment than a baby who does not develop this skill until he is six months old. By four months of age babies had visual accommodation skills comparable to those of normal adults.

A new landmark was attained in May, 1966 when the Educational Policies Commission sponsored by the National Education Association urged that "all children should have the opportunity to go to school at public expense beginning at the age of four." Although this was a move in the right direction, the partial evidence submitted in this paper emphasizes that the first three years of life are even more crucial than the fourth and fifth. Dr. William Fowler of Yeshiva University states that large numbers of potentially superior, as well as of average achievers, are lost to our society because of a lack of sufficient early stimulation. In order to bring this about it suggests that as much work needs to be done with parents, as well as children. The early months and years of a child's life are spent mainly at home and if the parents are educated to and encouraged to provide stimulating environment, the child will flourish

At three experimental centers at Harvard run by Dr. Jerome Bruner, Dr. Burton White and Dr. Jerome Kagan, concentrated experimentation is being carried out. They have all concluded that fundamental learning patterns are set very early in life; that before the age of three the child is particularly open to environmental influences for good or bad. If one waits beyond this age, the more radically the environment needs to be altered to effect change, and the probability of change becomes a little less with each successive year. All the criticisms of compensatory education and Head Start are not really valid because a radical change in the child's environment has not taken place. Head Start offered too little, too late and too diffuse. What is needed are more powerful programs for children the ages of two and six, which are year round and focused on teaching cognitive skills. What is needed is not a "band aid" remediation for disadvantaged children, but prevention of handicaps. In order to effect this, we need day care centers for very young children, accompanied by parent education. Frequently, mothers, when trained, become as effective, or more effective, than professional educators in their interaction with children.

At the Dubnoff School, we, too, have been working backwards in that we are accepting ever younger children. We now have an exploratory, experimental pilot infant program, designed to help normal, as well as distressed infants and their parents. Basically, the program aims to promote the fullest development of each individual infant.

Specific aims of the program are:

(1) To detect and possibly prevent or correct early deviant development.

(2) To alleviate the frustrations and enormous difficulties faced by parents of "high risk" infants.

(3) To assist each mother to perceive and accept her child (normal or deviant) and be aided to set appropriate expectation levels.

(4) To design replicable environmental conditions which facilitate spontaneous exploration and learning.

Bringing up a "normal" child can be a difficult enough task for an inexperienced mother. If the child has any handicap (organic, metabolic, developmental, etc.), the problems multiply into a distressed child/perplexed mother syndrome. On top of the original handicap, emotional overlays develop which later can take years to strip away. Can this be prevented?

The "nature-nurture" controversy has evolved into the more workable hypothesis of inner structure modifiable through experience and vice versa. Theoretically then, it should be possible to prevent problems by providing early therapeutic-educational experiences. Prevention is easier than undoing the problems later.

For the past 3½ years, our Compensatory Nursery School Project for three and four year old children, who came from poverty homes and, in addition showed some type of atypical functioning, has been ongoing. There is no doubt about the fact that these children and their parents have made great gains from the enriched environmental experience which they have had at this school. The children have been able to adjust to their later school placements and will, as a result of this experience, be much better able to realize their full potentials. They have gained not only in cognitive skills, language skills and pride in achievement, but also in the development of ego strength and the awareness that they are worthwhile human beings.

Of a total of 78 children admitted to the program, 58 entered public school, performed successfully and have maintained themselves to date through Kindergarten and first and second grades. This offers positive evidence of the effectiveness of early intervention.

The following are two abbreviated case histories representative of the children enrolled in our Compensatory Pre-School Program.

Debbie - Age: 3½ - Pretest Binet I.Q. Score 93
Age: 5 - Termination Test - Binet I.Q. Score 117

This child was referred to school from the Child Guidance Clinic - dropped from Head Start and private nursery school for destructive and anti-social behavior.

At the time of entry, she was living with her mother, stepfather and brother. During the following year there was a second divorce and a new baby born. Debbie had been battered and abused by her first father, thrown out of a second story window and sustained many injuries.

When seen by a psychiatrist at 3½, she was found to be anti-social, destructive, abusive to herself and brother, tried to stab mother and was usually screaming and crying. She was also abandoned by the mother on a doorstep where the police found her. The family moved 40 times in two years.

At entry to our school, Debbie's behavior was strikingly bizarre, if not outright psychotic; she crawled in lockers, hid under tables, screamed and cried and had no eye contact with adults or peers. She had limited communication. She also seemed to be out of contact with reality for long periods of time. She was often preoccupied with frightening, destructive fantasies.

The school provided a consistent milieu for her. Her relationship for almost one year was with a special teacher and one or two peers. Through patience, acceptance of her behavior and a structured program, this child began to develop ego strengths. She began to blossom in the school environment. At this time we arranged for therapy for both child and mother, as well as continuoua support by school personnel with the family. Mother became very involved in parent group and began to bring her own mother and sister to meetings. She continued in therapy until her last baby. Debbie will need to continue with outside intervention for a few years, but is making an excellent adjustment to first grade. She is in the top 10% of the class.

Her gains in this school were many; she developed self concept; normal in social adaptiveness; emotional problems became moderate, language articulation improved dramatically. Intellectually, she gained 24 points in I.Q., putting her in the bright category.

Melvin - Age: 3 years - Pretest Binet I.Q. Score 71
Age: 5 years - Termination Test Binet I.Q. Score 94

Cherrie - Age: 4 years - Pretest Binet I.Q. Score 73
Age: 5 years - Termination Test Binet I.Q. Score 97

These youngsters were both referred to this school by the Child Guidance Clinic. Neither had speech, only used sign language. Parents and older brother deaf mutes. Two younger siblings both have normal hearing.

Family Background:

Father, 26 years old - deaf all his life - in and out of trouble with the law - in and out of jobs - is unskilled. To compensate for inadequacy, belongs to rough motorcycle gang - chases women - has been married three times - has fathered 8 children.

Mother - had some schooling for the deaf. Socially isolated, afraid to leave home. Has little knowledge of how to raise children - totally dominated by husband. This is her second marriage. Has severe heart condition.

Melvin and Cherrie entered the school situation with only one word, "Mama." They used sign language and understood the teachers only if visual cues were employed. They were frightened and anxious, completely unaware of the meaning of verbal communication. They both tested in the retarded area. They had moderate emotional problems - minimal neurological problems - no language, were retarded in social adaptiveness, had poor self concepts and deficient motor functioning.

Parents were totally unaware that these children would have any problems, as long as they could hear, everything would work out. Family had moved 12 times in one year. There was no stimulation, or experience for these children to draw from.

The school became interpreter-teacher for these children. Nothing could be assumed and everything had to be taught. For the first six months, it was assumed that these were retarded children who would always need a special school setting. It was after this time that we felt there was much more capacity, although they were easily frustrated - resorted to physical fighting and were hyperactive in the classroom setting. Speech therapy for both children began in the classroom. Behavior modification was a goal in some areas. Teachers set higher expectations. Everyone concerned employed positive reinforcement of appropriate behavior and disregarded negative behavior.

There was a dramatic breakthrough of language and emotional stability with both children.

At the end of one year Cherrie went on to public school. She had acquired the ability to use verbal communication meaningfully, was able to print and had begun to read.

Melvin stayed another semester. He, too, acquired verbal skills, even greater than his sister's, due to his younger age and made great progress in the nursery school setting.

The severe deprivation at home had kept us from seeing their actual potential.

BD/th 12-1-69

The Rationale for Early Intervention

Bettye M. Caldwell
University of Arkansas
Center for Early Development and Education

There can be little doubt but that the importance of early development is an idea whose time has come. It came to us right in the middle of the twentieth century. And when it arrived, it seemed so obvious, so apparent to everyone, so void of opponents, that we must surely wonder every now and then why it took us so long to appreciate the fact. Certainly we have had reminders and exhortations from specialists representing many persuasions--poetry, philosophy, medicine, psychology, education--but until fairly recently we did not really pay too much attention. Perhaps this is not too surprising when we reflect on Aries' (1965) suggestion that the idea of childhood per se is of relatively recent origin, certainly not going back beyond the 18th century. The idea of early childhood as being an important developmental period probably does not go beyond the middle of the 19th century. Darwin wrote his famous biography of his young son in the 1840's but considered the material so likely to encounter censure and ridicule from his colleagues that he did not publish it until 1877. G. Stanley Hall, generally considered the father of child psychology, paid very little attention to the very young child because such a subject would not fit the methods of child study developed and promoted by Hall (questionaires). Freud, whose only venture into analysis of a child was that of his famous case, Little Hans, aged seven, did not even see the child but conducted the analysis through interviews with the father.

Educators in Europe were somewhat more perspicacious. Pestalozzi, Froebel, Seguin, Montessori, and the McMillan sisters were all convinced of the importance of early childhood and concerned with ways of teaching children during this period. But until we discovered early childhood for ourselves here in America, we did not really pay too much attention to the efforts of such pioneers. In the twenties and thirties early childhood had a brief fling in America, but after rather vitriolic attacks from the heavily "scientific" wing of the social sciences, the advocates slipped silently away to lick their wounds and to dream of apologies for their existence. Programs continued, but those in the universities operated to provide subjects for research studies for professors and students and to train teachers so they could provide research subjects for the next generation of students!

Then suddenly in the mid-sixties--I think we can officially date it as February, 1965, the month when Head Start was born--early childhood was rediscovered. Why? It was not a chance discovery. Rather this author feels that it is not so much that early childhood was rediscovered (as countless new book titles announce) as it was that it could simply be overlooked no longer. Reasons for the discovery appeared every time we picked up an idea, turned it over, and examined its implications. There were at least two classes of reasons. One I would call inferential, and the other I would call empirical. I would now like to discuss both sets of these reasons briefly.

Inferential Rationale for the Current Interest in Early Childhood

By an inferential reason for turning attention to early childhood I refer to ideas that were generated in another context, sometimes bearing no apparent relation to early intervention, from which one can infer the importance of early intervention. I would like now to mention at least three of these.

1. Animal studies dealing with the effects of early experience. For three or more decades now, exciting research has been carried out by biologists and psychologists concerned with the effects of experience upon development. In some instances the studies were carried out not because of any prior conviction about the importance of *early* experience but rather in an attempt to determine whether and to what extent certain kinds of experience had any effect at all. In general psychology

textbooks one usually finds such research cited under chapters concerned with the relative effects of maturation and learning (or heredity versus environment). However, in many studies the results forced attention on the timing of as well as the type of experience. Although a comprehensive review of such experiments is beyond the scope of this chapter, a few illustrative studies will be cited to demonstrate the contribution of this line of research to the current concern with early cognitive stimulation. The studies have used as dependent variables a variety of behaviors, including sensory, perceptual, and motor functions, learning and problem solving, and complex forms of social behavior.

For example, using performance on the Hebb-Williams (1946) tests of animal intelligence, Thompson and Heron (1954) examined the effects of rearing under varying conditions of social deprivation in dogs. Working with Scottish terriers, they arranged for three different degrees of deprivation in thirteen dogs: 2 were raised in complete isolation in which they encountered neither dogs nor humans from weaning until eight months of age; 8 were reared in cages in which they could hear and smell but could not see other dogs or humans and in which they had restricted light; and 3 were deprived only insofar as any or all laboratory animals are deprived. The 13 animals used as controls were reared as ordinary house pets. On all measures the deprived animals made more errors than the dogs reared as pets, even though the testing was done some four months after the termination of deprivation. They also showed significant differences on problems that required a delayed response and in tasks that required modification of a previously acquired technique of problem solving.

In terms of the effects of deprivation during early life upon learning ability in primates, the evidence is not clear-cut. In monkeys, for example, Roland (1964) and Mason and Fitz-Gerald (1962) have claimed to find no differences between isolates and controls. However, in these studies the deprived animals were described as extremely resistant to being placed in the apparatus and as requiring many adaptations before learning studies could proceed. These behaviors themselves represent significant distortions. Beach (1966) indicates that chimps reared in laboratories tend to be "brighter" than chimpanzees growing up in nature, with "home-reared" chimps appearing as geniuses by comparison. The chimpanzee reared by a family almost as though it were another of their own children (Hayes, 1951) tended to outstrip any described performance of chimpanzees either in nature or the laboratory. Such studies suggest that early experience does indeed have a profound effect on primates either in the sense of retarding or accelerating their development by the manipulation of certain critical experiences.

To summarize this brief recital of studies relating to either deprivation or enrichment of stimulation during the infancy period of various animals, the literature has been consistent in its suggestion that the critical time for the manipulation of experiences is during the early infancy of the animals under study. With nonhuman animals, this may be due to the fact that most complex forms of behavior are mediated by intrinsic processes which, when fully developed, are relatively less sensitive to variations in experience. The data, however, also point to the importance of experience during the time that neural patterns which form the substrata for all complex forms of behavior are being established.

2. Developmental studies of children reared in different environments. Differences on most cognitive variables can be demonstrated as a function of growing up in environments presumed to differ in the amount and quality of stimulation available.

Socio-economic Status and Development. The most commonly used index of presumed environmental adequacy has been the socio-economic status (SES) of the family. Computation of an index of SES generally involves consideration of some combination of the variables of occupation, income, education, and area of residence. Although a designation of "low" status does not automatically guarantee a less than optimal early experience, it represents a reasonably safe actuarial prediction that at least some conditions inimical to development will be present. Whether measured by general intelligence, school achievement, or laboratory learning procedures, one can generally demonstrate a deficit in performance associated with lower SES. For purposes of this discussion, the most crucial question is when this deficit appears. For example, as part of their recent large scale effort to assay educational achievement and relate this to equality of educational opportunity, Coleman et al (1966) found that most groups of children from lower SES backgrounds and most children representing minority groups in this country tended to score significantly lower than the national average on most measures of school achievement and thus lower than children from high SES backgrounds. This was noted as early as first grade. In terms of the discrepancy between measured performance and national norms, deficits increase as children progressed through the typical school experience. In an earlier observation this absolute increase in discrepancy between achievement and prediction for grade level led Deutsch (1960) to refer to the typical performance of disadvantaged children as reflecting a cumulative deficit.

But what about the child too young to be in first grade? Our information here is less convincing, as in the past we have had no adequate way of drawing samples of preschool children that are representative of different SES groups. Data that could be obtained from participants in Project Head Start permitted some inferences to be drawn in this area. For example, while children in Head Start samples were seldom if ever compared to children from middle-class families in terms of performance on various assessments, (middle-class children were not enrolled) by and large the average performance of Head Start children tended to be somewhat below the level of expectancy based on national norms. For example, average IQ could probably be described as falling somewhere between 85 and 90 in most of the Head Start samples at the time the children were introduced to the program.

But what about younger children? Data with the persuasive power of large numbers (1,409 children) were recently published by Bayley (1965) in the first presentation of information on the standardization of her new Scales of Mental and Motor Development. At all assessment points up to fifteen months of age there were no significant differences as a function of sex, birth order, parental education, geographic residence, or race on the Mental Scale. Negro babies tended to score consistently higher than whites on the Motor Scale, with the differences significant at most evaluation points up to twelve months but not significant thereafter. Later data from the larger study of which this standardization was a part will be instrumental in pinpointing the age at which differences begin to appear with clarity and the types of tasks on which the differences are most obvious.

A recent study by Golden and Birns (1968) suggests that, if one looks only at test scores, the difference has still not declared itself by the age of two but that if one regards the full constellation of test behaviors (similar to those observed by Hertzig, et al, 1968) that one can see differences by that time. Using the Cattell Infant Intelligence Scale (1940) and an experimental procedure designed to assess a child's achievement within the Piaget framework (Escalona and Corman, 1967), they examined three separate groups of Negro children who were twelve, eighteen, and twenty-four months of age. On neither test were statistically significant differences observed at any of the three age periods. However, the authors reported that children from the lower SES groups were far more difficult to test and that they frequently required more than one session to complete the procedures. Had the examiners not made Herculean efforts to get a valid score for each child, significant differences in mean scores might have appeared.

All the research summarized here points consistently to the period of roughly eighteen months to three years as being the time at which significant differences in cognitive level and style begin to distinguish children from relatively privileged and underprivileged backgrounds.

Effects associated with interpersonal social deprivation. Another area from which some of the impetus for interest in early cognitive stimulation came was the literature that related to interpersonal social deprivation, especially prolonged separation of an infant from its mother. In the summary of world literature presented by Bowlby (1952), cognitive functioning was often used as the dependent variable. That is, decline or deficit in intelligence was frequently offered as evidence of the effects of maternal deprivation. But, as later implied by Yarrow (1961) and Ainsworth (1962), while retrospective studies can implicate interpersonal deprivation as a factor in decline, scientific proof demands more rigorous data.

Major conceptual analyses of the role of experience in development

A third and by no means minor theme woven into this network of determinants of interest in early cognitive stimulation was produced by the publication of two important books. The first of these was Intelligence and Experience, by J. McVicker Hunt (1961). In this book Hunt attempted to survey all that was known at that point in time about the influence of experience on intelligence. Hunt felt that for too many years thinking in psychology had been dominated by a belief in fixed inheritance of intelligence, even though data from a variety of sources should have challenged this belief. As he put it, "Evidence from various sources has been forcing a recognition of central processes in intelligence and of the crucial role of life experience in the development of these central processes." In his book Hunt presented evidence that would challenge the belief in fixed intelligence and predetermined development, offering a model of information processing which stresses the importance of experience for the development of the central organization of information necessary to solve problems. He also reviewed for American audiences--the first exposure for many the thinking and meticulous experimental work of Piaget. The orientation of his summary of Piaget was in terms of the ways in which experiences "program" the development of the human brain. For Hunt the implications were clear: society must pay greater attention to what took place in the lives of very young children and should stop leaving things to chance during this period. In his own words:

"In the light of these considerations, it appears that the counsel from experts on child-rearing to let children be while they grow and to avoid excessive stimulation was highly unfortunate. . . The problem for the management of child development is to find out how to govern the encounters that children have with their environments to foster both an optimally rapid rate of intellectual development and a satisfying life.

Further, in the light of these theoretical considerations and the evidence concerning the effects of early experience on adult problem-solving in animals, it is no longer unreasonable to consider that it might be feasible to discover ways to govern the encounters that children have with their environments, especially during the early years of their development, to achieve a substantially faster rate of intellectual development and a substantially higher adult level of intellectual capacity (1961, pp.362-363)."

The second scholarly analysis regarded by this author as a major determinant of interest in early cognitive stimulation started from a somewhat different frame of reference but arrived at virtually the same conclusion. This was the book by Benjamin Bloom, Stability and Change in Human Characteristics (1964), which dealt with measured changes in the same individuals over time. Bloom studied carefully all the available data published from a number of major longitudinal studies carried out over the last half century. His chief interest lay in identifying periods during which the characteristics under study were relatively stable and those periods in which they were unstable and showed rapid change. In considering all the data that could be found relating to repeated measures of physical and personality characteristics, intelligence and achievement test data, Bloom concluded that, "The introduction of the environment as a variable makes a major difference in our ability to predict the mature status of a human characteristic."

Surprisingly little attention has been given to measuring environmental characteristics. As mentioned above, socio-economic status represents one crude attempt to summarize certain aspects of the environment that might influence early development. And yet, what is far more needed is some kind of measure which deals with the specific environmental characteristics which are likely to influence the particular growth characteristics in which we are interested. In calling attention to the impact of the environment, Bloom suggested further that it will have relatively more impact on a characteristic at a time when that characteristic is undergoing relatively rapid change than it will at a point in time when relatively little change is likely. A final step in the logic of this analysis was the realization that, since most characteristics are perhaps changing most rapidly during infancy and early childhood, one might expect the environment to have its greatest impact during the first years of life. This realization led Bloom to suggest, with specific reference to intelligence, "in terms of intelligence measured at age 17, about 50% of the development takes place between conception and age 4, about 30% between ages 4 and 8, and about 20% between ages 8 and 17."

Again the implications of this analysis are abundantly clear. If the environment can be presumed to have its greatest impact during roughly the first four years of life, careful attention to the development of growth fostering environments during this early period is essential. Furthermore, the analysis suggests that, as far as education is concerned, we may well have had emphasis placed at the wrong points in time. Whereas we have had elaborate mechanisms for providing education for older children in our society, guidance of the growth and development of the very young child has been a casual venture indeed. It is fair to summarize this section by saying that by the middle of the decade of the sixties, no thinking person could ignore the importance of the first few years of life. We were but one step away from a social mandate to give careful attention to the development of programs that would foster early cognitive development.

Empirical Rationale for Early Childhood Education

With such strong inferential or theoretical antecedents, does one need data? It always helps. And data we have been accumulating for more than ten years now. For purposes of this presentation I am going to group the data into old wave and new wave, with "old wave" going all the way back to 1958! (Incidentally, here I could cite some of the old-old wave research, that series of studies usually grouped disparagingly under the rubric of "the Iowa studies" in text books. But I shan't.)

As I look back on these empirical antecedents, thinking about frequency of citations and the like, I conclude that there were two main research projects which helped make the transition from the theoretical to the practical. Interestingly enough, both of them dealt with exceptional children (retarded). I am not sure which one should be cited first. The first one--Skeels and Dye, 1939--had little impact until its sequel appeared, but perhaps because of its historical primacy it deserves to be described first.

Following their serendipitous discovery that two infants transferred from an over-crowded orphanage to an institution for mentally retarded adolescent girls showed a spurt in development after the transfer, Skeels and Dye (1939) arranged an experiment in which retarded adolescent girls were used as "enrichers" for a larger group of 13 babies who were failing to thrive in the orphanage environment. At the time of transfer the babies were about 19 months of age and had a mean IQ of 64. A contrast group of 12 infants was found, averaging 16.6 months of age at the time of the first assessment of their abilities and having a mean IQ of 86.7. Thus the contrast infants did not appear to be as seriously damaged as the experimental group. After an experimental period of approximately 19 months, the enriched children showed an average IQ gain of 28.5 points, while the contrast group, after an average interval of 30.7 months, lost 26.2 IQ points. Such short-term gains are impressive, but a demonstration of some lasting effects would be grounds for jubilation.

After the passage of some 30 years, Skeels (1966) made a persistent and determined search and tracked down the original subjects to determine whether their progress during the post-experimental period had continued at a rate comparable to that shown during the experimental period. The search was no small job, as quite a few of the group had in the meantime been adopted and acquired new names.

A quote from Skeels regarding the results of the follow-up is well worthwhile:

"The two groups had maintained their divergent patterns of competency into adulthood. All 13 children in the experimental group were self-supporting, and none was a ward of any institution, public or private. In the contrast group of 12 children, one had died in adolescence following continued residence in a state institution for the mentally retarded, and 4 were still wards of institutions...

In education, disparity between the two groups was striking. The contrast group completed a median of less than the third grade. The experimental group completed a median of the twelfth grade. Four of the subjects had one or more years of college work...

Marked differences in occupational levels were seen in the two groups. In the the experimental group all were self-supporting or married and functioning as housewives. . . In the contrast group, four (36%) of the subjects were institutionalized and unemployed. . .

Eleven of the 13 children in the experimental group were married; nine of the 11 had a total of 28 children, an average of three children per family. On intelligence tests, these second-generation children had IQ's ranging from 86 to 125, with a mean and median IQ of 104. In no instance was there any indication of mental retardation or demonstrable abnormality.

The cost to the state for the contrast group, for whom intervention was essentially limited to custodial care, was approximately five times that of the cost for the experimental group. It seems safe to predict that for at least four of the cases in the contrast group costs to the state will continue at a rate in excess of $200.00 per month each for another 20 to 40 years. (Skeels, 1966, pp. 54-55)."

This experiment remains one of a kind in its demonstration of statistically significant changes that had clear meaning in terms of altered potential for behavior that held up over a period of thirty years.

The second major empirical antecedent which deserves special mention was conducted by Kirk (1958). He studied the development of some 81 retarded children between the ages of three and six at the beginning of the study, with IQ's ranging from 45 to 80. Of the total group, 28 children living at home with their families attended a special nursery school; 15 children residing in an institution for the retarded attended a nursery school operated in the institution. Two contrast groups were 26 retarded children living at home who did not attend nursery school and 12 institutionalized retarded children for whom no extra enrichment within the institution was offered. All of these children were followed for several years, with very encouraging results. Seventy per cent of the children for whom special preschool programs were available showed IQ increments ranging between 10 and 30 points, even though half of the children were classified as "organically" retarded. The control groups of children declined with increasing age, with the difference between changes shown by the preschool and control groups statistically significant. Furthermore, the gains shown by the experimental children during the enrichment period were sustained for several years during the follow-up period.

In commenting on his own data and the findings of Skeels and Dye and others who have attempted to produce changes in the developmental rate of retarded children, Kirk (1966) has suggested that greater gains can be expected if the enrichment is begun earlier. None of the known studies that began enrichment programs as late as age six has produced gains as large as those of either Skeels and Dye or Kirk.

The current intensification of interest in early education began in the sixties. One of the first projects to get under way was the Early Training Project (Gray, et al., 1966) in Nashville, Tennessee. In this project a summer preschool program was offered to disadvantaged Negro children, with home visitor contacts provided during the academic year. One group received three summers of this enrichment program, and one received two summers. Two control groups were identified, one living in the same city and another in a city about 25 miles distant (to minimize casual diffusion of program ideas). The curriculum was carefully structured and focused on what the authors call aptitudes for achievement, attitudes toward achievement, and careful manipulation of reinforcement for desired behavior. At the end of the summer preschool experience, there were significant differences between the groups that had received the summer preschool plus winter home visiting and the control groups (Gray and Klaus, 1965). But even more impressive is the fact that at the end of second grade there were differences between the two experimental groups and the two control groups. By and large, no superiority for the group that had had three summer preschools over the group that had had only two could be detected.

The author and her colleagues were engaged in the conduct of an enrichment project in Syracuse, New York between 1964 and 1969. The most unique feature of this project was the age range of subjects accepted into the program--six months to five years. In the first slide data dealing with cognitive results associated with participation in the program are presented. In this slide you will see mean developmental quotients for children who entered the program prior to or after age three and appropriate controls. Our hypothesis had been that the younger group would show gains of greater magnitude. However, as is obvious in the slide, the absolute gains were greater in the older than in the younger subgroup, although the difference between gains shown by the enrichment children and their controls was greater for the younger groups. Both sets of differences are significant beyond the .01 level of confidence.

The next slide presents data of a different sort which, nonetheless, demonstrates essentially the same point--the power of an early enrichment environment to keep development proceeding on a normal course. In this slide are average developmental test scores for children in four different subgroups in the enrichment program--the ones, twos, threes, and fours. These are cross-sectional data, not data based on repeated assessments of the same groups of children (as was the case in the previous slide). It will be noted that the children in the enrichment group at the succeeding age levels continue to test at a high average intellectual level, whereas the children in the control group show the pattern of gradual decline characteristically demonstrated in disadvantaged children. Mean scores for the two four-year-groups are 112 for the enriched and 95 for the control groups, respectively.

I could continue to cite data of this sort until you could not possibly refuse to conclude that early childhood enrichment produces impressive gains in the intellectual functioning of young children. In addition to the studies I have cited (and time limitations do not permit an exhaustive recitation), similar findings have been obtained by Weikart (1967), Bereiter and Engelmann (1966), Nimnicht and Meier (1967), Karnes (1969), Hodges and Spicker (1967), and many others. The consistency of results with different groups, different pedagogy, different samples is one of the most persuasive features of the data.

In this review thus far I have concentrated almost entirely upon cognitive changes--mainly scores on conventional intelligence tests--and have given almost no attention to changes in social and emotional functioning. Similarly neglected are achievement data. The first neglect is largely due to the absence of good instrumentation appropriate for young children, and the second is due largely to the fact that not too many of the current projects have reached the level of maturity where conventional achievement tests can be given to the children. Also not mentioned is the fact that, while all cited programs have concentrated on disadvantaged children (though not exclusively so in the Syracuse project), most of the programs have had some concern with either circumventing or ameliorating culturally influenced mental retardation. For example, all the children in the Weikart projects have been certifiable as educably mentally retarded. A goodly proportion of the children participating in all the other programs had initial IQ's which would classify them as falling within this range. So, even though generalizations made from the data stress implications for "disadvantaged" children, the results should by no means be regarded as not relevant for persons working with the retarded. Being disadvantaged seems to connote being multiply at risk in many areas of development.

The Next Steps

At the risk of belaboring the obvious, I must say that the first thing we need to do is more of the same. Early childhood education today would not be having to experience a renaissance if, some thirty years ago, research that was of good quality for its time had been continued. At this point nothing is proven other than the fact that people can become excited about early experience. To conclude my summarization of the rationale for early intervention, I would like to mention at least four obligations that we have if we are to make significant progress from this point forward.

1. Researchers conducting studies dealing with the effects of early intervention are obligated to follow their subjects into subsequent developmental periods. This is not easy to do, and sometimes it is not even pleasant to do. But it is necessary. The neat, clean, quick research study is everybody's favorite research style; the prolonged, progressively boring, occasionally discouraging longitudinal pursuit is the obligation of everyone concerned with change over time--which is what development is all about. In order to determine conclusively the effects of early intervention, such follow-up is a must, for some change on most assessment instruments is likely to be found any time there is a second assessment. As meaningful control groups are often difficult to obtain, long-term follow-up is mandatory lest pre-post changes merely reflect increased familiarity with the testing situation or the instrument.

Let me illustrate this point with some recent data from Karnes (1969). In the next slide (Slide 3) can be seen results of a comparison of gains made during and following three different preschool enrichment programs: ameliorative, direct verbal, and traditional. The ameliorative curriculum stressed verbalization in conjunction with the manipulation of concrete materials as the chief means of ameliorating language deficiencies measured by a test of linguistic abilities. The direct verbal curriculum was that generally known as the Bereiter-Engelmann (1966) program and is one that stresses intensive oral drill in verbal, mathematical, and logical patterns. The traditional curriculum had as its goal promotion of motor, social, and general language development of the children through the medium of indoor and outdoor play with available materials. The direct verbal group attended school in its special building and followed its special curriculum for two years. The ameliorative curriculum group attended the special preschool for one year and public kindergarten plus one hour a day of special work the second.

The traditional group attended preschool one year and kindergarten the second. All three groups attended regular public schools in their community (Urbana, Illinois) for the third year of the study. Average attainments of the groups on one of the most commonly used tests of intelligence are shown in Slide 3. All groups showed gains during the preschool year, with the gains shown by the children attending the two structured programs (direct, verbal, and ameliorative) significantly greater than those shown by children attending the traditional program. During the second year, only the children attending the direct verbal program continue to gain. This is the group that had a second year of the special preschool curriculum instead of regular kindergarten. All three groups dropped during the first grade to the point where differences among the groups were no longer statistically significant, though they kept their relative positions.

Although we have not followed our subjects as far into their school careers, our Syracuse data look very similar to the data reported by Karnes (Slide 4, Slide 5). That is, there is a spurt following preschool enrichment, and there is a decline when the children enter "regular" educational programs. The implications of these studies lead directly to my next point.

2. There must be continuity between "preschool" enrichment and subsequent educational endeavors. Implications of the follow-up studies now available are abundantly clear: we cannot expect gains associated with individualized, carefully planned, meticulously executed preschool programs to continue unattenuated unless subsequent educational endeavors are as individualized, carefully planned, and meticulously executed. Thus it seems imperative to link preschool programs with elementary education programs. This is what we have accomplished in our Center for Early Development and Education jointly operated by the University of Arkansas and the Little Rock School District. As we have only begun our operations, I cannot at this point offer proof of the value of such a model. But I am confident that we will be able to do so within a short time.

3. There must be more careful program description. This is a point that cannot be stressed sufficiently. At this stage in the history of early childhood education, most of us inside the field are over the hurdle of "does early education produce positive effects"--at least at the level of our personal convictions, if not at the level of substantial data. We are instead engaged in debates as to what kind of intervention produces positive effects, or, better still, what kind of intervention produces certain specific effects. Or, still better, what kind of intervention produces specific effects in different children. That is, we are at last concerned with curriculum or pedagogy. This is a very salutary situation, for the field has not always been characterized by openness to new and different ideas! At this point in time, it is probably fair to state that proponents of the "structured curriculum" are gaining the field from those who advocate what Karnes referred to as a "traditional curriculum." Yet the truth of the matter is probably that we are all more alike than different--or at least that we are not as different as we claim to be. Note the qualifications in those statements. They are necessary because we have very little descriptive data on what actually transpires in most early childhood programs. Weikart (1969) recently offered evidence that the magnitude of change associated with different curricula is similar provided the teachers of each style are convinced that what they are doing is the best thing. He stressed that, if a particular staff model could be created--one which permitted planning, team teaching, supervision, parent involvement, child-oriented focus, and deep staff commitment--seemingly different curricula were actually equivalent. I would offer as a counter-interpretation of his data the suggestion that perhaps the curricula themselves were not as different as was assumed. Until we have detailed, naturalistic descriptions of minute-to-minute person-person and person-object classroom transactions, we

cannot conclude anything about the effectiveness of different curricula or even that different curricula exist!

4. Wisdom and good will in the designation of priorities of money and time. Wisdom and good will are always good attributes to have around. But at times of peak excitement about certain ideas, it is easy to campaign for one approach as opposed to another, to seek to divert funds from one endeavor to a different one. As a passionately committed early childhood educator, I can see no justification at this time for a strategy that would involve diversion of funds from education of older children into early education. Rather we need to work to increase allocations for programs for all ages. In our enthusiasm for early education, it is easy to promise too much. When too much is promised, a little disappointment seems like a lot. Or, to use an expression I have used on other occasions, the natural sequel to over-sell is over-kill. It is my fervent hope that in our current enthusiasm for early intervention, we do not try to over-sell ourselves to the point where we cannot deliver and thus be forced into another early demise. We do not need another renaissance of interest in early childhood; we only need to make certain that the current interest fulfills its obligation. As this time we are more comfortably theory-based and more substantially data-based, that should not be an impossible task.

Footnote

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AN EDUCATIONAL SYSTEM FOR DEVELOPMENTALLY DISABLED INFANTS*

John Meier, Ph.D. and Leslie Segner, Ph.D.
University of Colorado, Medical Center
Denver, Colorado

Introduction

The literature is beginning to burgeon with reports of small experimental studies and massive intervention programs designed to compensate for the multiplicity of developmental disabilities suffered by young children with various physical and/or environmental deficits. The trend is toward earlier and more systematic intervention to compensate for whatever deficiencies can be identified, ameliorated, and ultimately prevented (Meier, 1969b; Meier & Martin, 1970b). Those who have reported quite favorable results from their intervention programs agree that the younger child is more suitable for properly planned prevention strategies. Thus, as a programmatic testimony that such programs as Head Start have been too late and inadequate, particularly for many children whose deficits are a function of the culture of poverty, a new thrust is being directed toward education for infants and toward more cognitive content in preschool programs. At the John F. Kennedy Child Development Center, several efforts along these lines have recently been instituted. This paper presents the rationale and a curriculum framework for an infant education system currently being researched and developed at the JFK Center and several field test satellites.

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*This paper was prepared for presentation at a special international conference of the Council for Exceptional Children focused on early childhood education held in New Orleans, December, 1969. Dr. Meier is Director of the John F. Kennedy Child Development Center at the University of Colorado Medical Center where he is an Associate Professor of Clinical Psychology and Pediatrics. Dr. Segner is a staff associate at the JFK Center and an Assistant Professor of Clinical Psychology at the University of Colorado Medical Center. The writers gratefully acknowledge contributions to this paper from numerous interdisciplinary colleagues.

Rationale for Infant Education

Research on the determinants of functional retardation has revealed that more than two-thirds of "slow learners" and "school failures" are educationally retarded on the basis of experiential deprivations which have left their scars before the child enters school (Bloom, 1964; Deutsch, 1967; Fowler, 1962; Hunt, 1961; Masland, Sarason & Gladwin, 1958; Reissman, 1962). The irreversibility of the effects of early deprivation makes it evident that social planning in the area of developmental disabilities must include prevention as a first priority. Although functional retardation usually has no demonstrable organic correlates, it is every bit as real and disabling to the individual as are the more grossly identifiable forms of brain damage and chromosomal defects. With knowledge that preventive environmental measures are possible, it is exigent to discover the most effective ways to intervene in this adverse developmental process which affects at least fifteen percent (Meier, 1969) of children entering school.

A primary thrust of the government's interventions in the poverty cycle has been the early childhood education efforts of Project Headstart. While it is unquestionable that the Headstart Program has promoted the social, physical, and emotional development of most of the children involved, recent evaluations have suggested that some basic reorientation and reorganization are necessary before this program can be of maximum benefit in facilitating intellectual growth and development. One of the major recommendations growing out of the Westinghouse Learning Corporation's assessment of Headstart (1969) is that intervention must begin prior to the preschool (four-year-old) period of development in order to be maximally effective.

The notion of education during the first three years of life is not a new one, and it receives support from knowledge of the critical significance of this developmental period for later learning and adjustment. Developmental services, including day care programs for infants and toddlers, are becoming a central part of the anti-poverty effort, e.g., the Federally-sponsored Parent-Child Centers, Community Coordinated Child Care (4-C), and Model Cities Programs. These programs provide a convenient means of implementing infant education programs for the disadvantaged children who need them most.

The literature on the effects of socio-economic class on development is uniform in its conclusion that there is strong, positive correlation between material disadvantage and intellectual deficit (Davis & Havighurst, 1946; Deutsch & Brown, 1964; Jones, 1954; Pavenstedt, 1965). Although it has been demonstrated repeatedly that children from the culture of poverty are at least equal to privileged children in sensori-motor abilities very early in life, by eighteen months of age the intellectual inferiority of the children of poverty becomes evident, and from that point on the curves of intellectual growth for the two groups show a continuing and increasing divergence (Bayley, 1965; Deutsch, 1968; Knoblock & Pasamanick, 1953).

In fact, Kagan (1968) has found that as early as four months of age, lower-class babies vocalize significantly less than do middle-class babies. Sears (1957) has hypothesized that the fundamental difference between lower- and middle-class child-rearing practices lies in the variable of "access to information." Bernstein (1961) has made a similar suggestion in his formulation of the linguistic difference between the classes. He suggests that communication in lower-class families is marked by an absence of verbal elaboration and language-mediated internal cues, as contrasted to the highly elaborated nuances of communication found in the verbal interaction of middle-class families. This reliance of lower-class families on nonverbal and implicit modes of communication results in a lack of complex verbal input which is so necessary to the development of language fluency in young children. Since verbal facility has been shown to be the best predictor of later intelligence (Bayley, 1967), it is evident that ways must be found for providing children in the culture of poverty with models for adequate language development beginning in the earliest months of life.

One method of achieving this is that of instructing literate parents to set aside some time each day for reading to their infants. Irwin (1960) conducted an experiment in which lower-class mothers read to their infants for ten minutes a day, beginning at thirteen months of age. When tested after seven months of this treatment, the experimental infants were found to be substantially superior to a control group in all language functions.

Findings such as mentioned above, which suggest that environmental modification can alter the course of intellectual development, have formed the theoretical basis for programs of comprehensive early intervention with lower-class infants. A relatively large-scale study of education for infants and toddlers has been underway for several years under the direction of Keister at the University of North Carolina at Greensboro. This project was designed to demonstrate that growth-facilitating and educational experiences can be implemented through group day care facilities for children from birth to age three. Unlike the typical nursery situation in which working mothers leave their infants for group day-care, this program has a high ratio of care-givers to children, quality health care, and individualized educational programs geared to each child's particular needs. A preliminary report on the evaluation of this project (Keister, 1969) compares fourteen infants treated in this enriched day care with fourteen home-reared infants matched on age, sex, race, and education of parents. The cooperating comparison families were presumably quite interested in their infants and thus not strict controls. There were no significant differences between the two groups on either the Bayley Scales of Infant Development or the Vineland Social Maturity Scale, administered regularly between 18 and 36 months of age. Children from both middle- and lower-class homes were included in this analysis but, unfortunately, the social class of the subjects was not discussed as a variable. From these data it is only possible to conclude that high quality group day care supports the infant's mental, motor, and social development equally well as well as rearing in a nurturant home environment.

The Children's Center in Syracuse, formerly under the direction of Caldwell (1967), is another experimental program in group day care for children of lower-class working mothers. This project is seeking to instill in infants and young children the foundations of a positive self concept, basic conceptual thinking, and enriched experiences with words and events. The primary goal of the program is to demonstrate that an enriched day care environment can offset the disadvantages of maternal separation and give additional cognitive and sensory input which the lower-class home is frequently unable to offer. Although a complete evaluation of the development of these children, in comparison to matched controls, has not yet been published, Caldwell's preliminary impressions of the effectiveness of the program are positive.

One issue which cannot be ignored in this discussion has to do with the effects of multiple mothering. On the basis of the results of Rheingold

(1961) and Caldwell and Hersher (1964), it seems that the presence of more than one mothering person has no ill effects if all the "mothers" are effective and work together. The literature on Kibbutz-reared children (Spiro, 1958) certainly suggests that multiple mothering does not necessarily cause the child difficulties in the long run.

A longitudinal study of Negro males in New York City was recently reported by Palmer (1969) in which the experimental infants were given two one-hour training sessions a week in a one-to-one situation. There were two types of training: "concept training," which included systematic instruction; and "discovery," in which the same play materials were presented but with no instructions. After eight months of such training, which was begun at age two, both experimental groups were superior to controls on such diverse tasks as the Stanford-Binet Intelligence Test, language comprehension and use, perceptual discrimination, motor behavior, delayed reaction, and persistence at a boring task. This superiority of the trained groups was still present on retesting one year later. Palmer proposed four factors to account for this effect: 1) the regularity of exposure to a structured learning condition; 2) the affective relationship between instructor and child; 3) the uninterrupted nature of the instructor-child interaction; and 4) the increasing realization by the child that he could respond to stimulation and be rewarded for his response.

Probably the largest scale and most thoughtfully planned early education project undertaken to date is the one at the University of Florida under Gordon's direction. This program utilizes disadvantaged women to train other indigenous disadvantaged mothers in techniques of infant education to be used at home. A recent report (1969) of Gordon's findings indicates that at the end of the first year of the project the children whose mothers had been given instructions in infant education were superior to control children on the Griffiths Mental Development Scales. At the end of the second year, the same differences obtained for the children who had been in the program from 3 months to 24 months of age, as well as for those who had participated from 12 months to 24 months of age. However, those children who were enrolled only from 3 months to 12 months of age were not significantly different from their controls, which suggests that the advantage gained during the first year is lost unless the education program continues during the second year of life. It is interesting to note that there was a language lag on both the Griffiths and Bayley Scales for both the children enrolled in the education program and their controls. This suggests that the language deficits in the environment of these children were not completely offset by the education program. However, the fact that the developmental quotients of the participant children were elevated in comparison to controls is encouragement for developing more effective programs.

There is an impressive body of evidence, from studies of both lower animals and human subjects, which points to the critical and pervasive influence of experience in infancy. Studies by Dennenberg (1964), Harlow (1963), and Levine (1960), with various kinds of laboratory animals, have all led to the conclusion that close physical contact and stimulation are essential for adequate physiological, emotional, and adaptive development. Another set of investigations relating to the importance of early experience has been concerned with critical periods of learning, particularly imprinting. The work of Hess (1967), Scott (1962), and others has suggested that in certain lower animals there exist functions capable of being learned only during circumscribed periods of development. A third group of animal studies bearing on early experience has compared the social development and learning of animals raised in enriched environments with those raised in deprived environments. Thompson and Melzack (1956) found that dogs reared in cages providing minimal stimulation were disoriented and deficient in learning abilities when compared to dogs which had been reared in normal or enriched environments. Some more recent investigations (Bennett, Diamond, Krech, & Rosenzweig, 1964; Krech, Rosenzweig, & Bennett, 1962; Rosenzweig, Bennett, & Diamond, 1967; and Valverde & Marcos-Ruiz, 1968) have shown that rearing in enriched environments produces anatomical as well as biochemical differences in the brains of rats and mice. Not only were the experimental animals more proficient on problem-solving tests, but they were also found, on autopsy and histological studies, to have more of the enzyme associated with transmission of neural messages (acetylcholinesterase) in their brains and to have greater anatomical depth and dendritic proliferation in the cortical areas most involved in receiving and processing the enriched data.

The research relevant to infant education using humans has been mainly concerned with the consequences of maternal deprivation and institutionalization, and the developmental effects of handling and physical contact. Early studies on the effects of maternal deprivation (Bowlby, 1951; Spitz, 1946), were alarmingly grim in their description of the devastating and lasting consequences of early lack of mothering. Subsequent investigations (Dennis & Najarian, 1957; Goldfarb, 1955; Provence & Lipton, 1962) have led to similar, although less severe, conclusions. In essence, they have shown that children deprived of a consistent mothering figure in early life are significantly behind normal children on almost all measures of growth and development. The most strikingly deficient areas are language behavior and social competence.

Since neither institutionalization nor mothering are pure or unitary variables, subsequent investigations have endeavored to isolate the factors in the mothering process which are crucial for the infant's development. One such factor which is now knwon to be basic is the handling of the infant. Brody (1951) reports that visual attentiveness in infants is highly and positively correlated with the amount of handling by the caretaking person. Studies by Casler (1965), Rheingold (1961), and White, Castle & Held (1964) have shown that additional handling and attention of institutionalized infants facilitates their development and increases their alertness. The explanation for this phenomenon probably lies in the relationship between physical contact and visual curiosity. Spitz (1946) has suggested in his formulation of the "cradle of perception" that the infant can only begin to see and learn about his environment through his close physical relationship with his mother. Along these lines, Korner and Grobstein (1967) recorded the visual scanning behavior of twelve neonates, and observed that their eyes were open ninety percent of the time when being held, and only twenty-five percent of the time when either left unhandled or moved to a sitting position. Clearly, this finding suggests that the development of early visual-motor schemata is facilitated by handling, since it is known even at this young age that the child can discriminate between visual cues (Fantz, 1967). Yarrow (1963) found a similar result in a study of children in foster care. He discovered a significant correlation between developmental test scores at six months, and ratings of amount of appropriateness of maternal handling. In the same vein, Rubenstein (1967) reported a significant positive relationship between ratings of maternal attentiveness and measures of exploratory behavior and preference for novel stimuli in five-month-old infants.

In a different tradition from the aforementioned studies of the effects of early experience, the work of Piaget (1952) has equally important theoretical significance. The relevance of Piaget's work for the rationale for infant education lies in its emphasis on the critical importance of the earliest learning experiences. His work clearly implies that the later expression of intelligent behavior has its roots in the schemata laid down during the earliest months and years of life. Piaget's observations on the continuity of development point to the cumulative nature of intelligent behavior, which he conceptualized as a sequential unfolding process. Although he did not discuss the effects of deviant environmental circumstances such as environmental deprivation or inborn handicaps on cognitive development, one can infer that without intensive exchange between the infant and his environment during the sensori-motor period (the first eighteen months), there will necessarily be impairment of later adaptation and intellectual growth.

Infant Education Curriculum

A couple of years ago, Barsch (1967) wrote a chapter in a book about exceptional children which he entitled, "The Infant Curriculum - A Concept for Tomorrow." The chapter was the last of a series of contributions from experts of many disciplines writing in regard to the exceptional, or more specifically, the developmentally disabled infant. It seemed quite fitting, after having presented the multiplicity of problems which occur in very early childhood from the viewpoint of numerous disciplines, that some prescription for the amelioration or, even better, the prevention of such disabilities be offered. Certainly Barsch's interest and sophistication in the perceptual-motor development of the human organism qualified him to make informed recommendations about the optimal development of the human organism, particularly where efficient perceptual-motor functioning is concerned. However, as a reflection of the state of the art, Barsch admittedly had precious few concrete methods and materials to suggest in behalf of the education of infants.

> "The optimal content of this paper should be a carefully documented presentation of an Infant Curriculum which has already been tested and tried over a period of time and had a profitable outcome. The sequences of stimulation should be precisely described in handbook style as a ready reference for any parent or clinician who wished to pursue the same course with a given infant. It should be possible, perhaps, to have developed the curriculum to such a point of clarity that specific sequences might have been studied in each perceptual mode so that remedial sequences might be strategically employed to the benefit of those infants who have suffered specific losses or impairments. Unfortunately, the concept of an Infant Curriculum is far from such an advanced stage of development...." (1967, p. 553)

> "Some day in the future it might be possible to present a detailed listing of stimulation sequences which have been scientifically organized on the basis of a simplicity to complexity continuum much in the same manner as we can now prescribe a remedial course for the failing reader. For the present, however, we must content ourselves with providing an outline and a few suggestions and hope that those who find this an acceptable concept will fill in the details from their own creativity and dedication...." (1967, p. 562)

The preceding section dealing with the rationale for infant education suggested that a number of research studies support the notion of infant education and early compensatory intervention for high-risk infants and toddlers. The Bayley Infant Scales of Psychomotor and Mental Development (1969), the corresponding efforts by Uzgiris and Hunt (1969), the Yale Developmental Schedules (which incorporate much of the Gesell Institute findings), and the more gross screening devices such as the Denver Developmental Screening Test (Frankenburg and Dodds, 1969) all indicate that there are specific behaviors and capabilities which are expected of children at various chronological ages. These developmental milestones serve as guides to the systematic education of infants who have not attained the expected level of achievement as specified by various students of early childhood development.

Some first approximations to a curriculum for infant education have been developed and tested by Caldwell (1967), Gordon (1969), Gray (1968), Weikart (1967), and others. The preliminary findings from their efforts to train indigenous paraprofessionals to assist parents in helping their infants to achieve the various prescribed developmental milestones have been encouraging. There are many opponents to such intervention and many others who are either lukewarm to the idea or feel ill-prepared to implement such programs and thus remain adamantly uncommitted to any specific formulation of an individualized curriculum complete with entry behaviors and terminal objectives. Some of the reluctance on the part of child development specialists is due to a genuine, albeit romantic, appreciation for the pristine innocence of the infant. Some already harassed parents prefer the greater convenience of having a more passive infant and of not having to busy oneself about the additional task of tending to educational experiences for infants whose toileting, feeding, and sleeping needs are already too much for the harried mother to accomplish. The reticence frequently is also a function of a lack of familiarity with even the rudimentary requirements of curriculum building.

It is herein suggested that the rationale and techniques for constructing a curriculum based on the development of an individualized instruction program is quite appropriate for the design of an infant education curriculum.

As a matter of fact, the entry and terminal behaviors, particularly in the realm of sensory-motor-perceptual functioning have already been rather thoroughly delineated by the observable behaviors ennumerated in the aforementioned infant appraisal instruments. For example, Item 42 on the Bayley Infant Scale for Psychomotor Development specifies that a child should be able to walk with help some place in the age range between seven and twelve months. This criterion performance, then, indicates whether or not a child of sixteen months chronological age should be given additional experiences to enable him to carry out the sensory-motor-perceptual functions requisite in walking with someone holding his hands. Thus, the terminal behavior for a given learning episode is to be able to perform a given task at criterion level. If an infant is unable to accomplish this task then it is necessary to go back to previous tasks until a point of mastery of the criterion performance is established. From this point of mastery, perhaps Item 40, Stepping Movements or Item 38, Stands up by Furniture, to the desired point of achievement a step-by-step sequence of training would be instituted and practiced until mastery of the underlying skills and understandings is accomplished.

Although this procedure involves educating youngsters to successfully perform on test items, there is nothing inherently wrong in this provided that the test items sample behaviors which are universally recognized as essential indices of normal infant growth and development.

> "The accurate appraisal of the many splendored phenomena comprising a young child's behavioral repertoire has been a challenge to psycho-diagnosticians for several decades. Even before Froebel's six gifts and Binet's bead-stringing and cube-stacking exercises some standard quantified gradations of tasks had been developed to assess some of the kaleidoscopic aspects of human functioning. However, only recently has there been a concerted effort to zero

> in on specific components of a young child's cognitive, affective and conative abilities for scientific diagnostic and prescriptive pre-school programming...." (Meier, 1967, p. 175)

It is not suggested that the specific test items prescribed on the developmental assessment instruments constitute the entire curriculum, but the behaviors which are sampled are considered important enough and reliable and valid enough that their mastery is deemed desirable. Karp & Sigel (1965) make a strong case for a test's truly reflecting the desired constellation of terminal behaviors.

> ".....tests and trained observation should take on new meaning and different diagnostic significance. In addition to appraising learning difficulty, measurement and observation should lead to remedial and compensatory techniques which can be incorporated readily into the curriculum and translated easily into work in the classroom. Psychoeducational appraisal of the disadvantaged pupil confronts us anew with the need to develop assessment procedures that both clarify the mechanisms by which learning occurs and guide the teaching-learning process." (pp. 409-410)

A history of the intelligence-testing movement clearly demonstrates that standardized tests comprise a distillation of those skills and abilities which are most validly and reliably assessed and communicated to or replicated by other investigators. Therefore, it is unnecessary to be apologetic or surreptitious about employing the current and rather well-conceptualized series of behaviors contained in various infant assessment instruments at least as the skeletal framework for an infant curriculum. The fleshing out of such a curriculum is both a function of the individual infant, whose idiosyncratic style of dealing with his environment requires an equally individual match of educational experiences suitable to his learning style and a function of the ingenuity of the learning facilitator, who by trial and error attempts to respond (real response ability) to the infant's needs. The appropriateness of items on standardized test instruments is challenged by many defenders of the culture of poverty. Wechsler makes a cogent reply to this criticism.

> "The I.Q. has had a long life and will probably withstand the latest assaults on it. The most discouraging thing about them is not that they are without merit, but that they are directed against the wrong target. It is true that the results of intelligence tests, and of others, too, are unfair to the disadvantaged, deprived and various minority groups but it is not the I.Q. that has made them so. The culprits are poor housing, broken homes, a lack of basic opportunities, etc., etc. If the various pressure groups succeed in eliminating these problems, the I.Q.'s of the disadvantaged will take care of themselves." (p. 66)

Furthermore, as field test efforts proceed to empirically validate curricular content, new methods and materials inevitably are generated, much as necessity is the mother of invention. The extensive writings about observations of child growth and development in various natural settings by such authors as Church (1966), Gesell, et. al. (1943), Piaget (1952), Terman (1925), and others help to bridge gaps in the framework circumscribed by the aforementioned infant assessment instruments.

Barsch concludes his chapter by suggesting several considerations which seem appropriate for this effort:

> "During the gestational process of the concept of an Infant Curriculum (1) the dynamics of deviancy must be considered a generic factor of homogeneity across disability populations (2) the multiplicity matrix of primary, secondary and tertiary deviations must be regarded as the singular focus (the matrix is the unit of concern (3) a multi-disciplinary and a multi-specialty approach must be the governing professional identification and (4) a loose period of cognitive exploration and implementation must precede any effort to exercise rigorous experimental procedures...."

As implied in the preceding rationale section, there are several assumptions underlying the notion that systematic education of infants facilitates their optimum development. A basic assumption is that the developmental process occurs as the result of a simultaneous mutual interaction between biological mechanisms and environmental factors (Bigge & Hunt, 1962), that is, the organism does not develop without use. Secondly, it is assumed that the infant actively seeks the stimulation required for his growth. A third assumption is that information is processed and the infant develops only when he performs certain learning acts within certain kinds of surroundings. A fourth assumption, stated by Bloom (1964), is that the first three years are a critical period for intervention and "feeding" emerging abilities, because of the unparalleled growth of intelligence during this period. The fifth assumption is that the disproportionate amount of developmental disabilities in environmentally deprived children is due to either inadequate or inappropriate education during the earliest years of life. Finally, the present thesis is that corrective measures can be implemented with these high risk infants to prevent later intellectual deficits.

The I.E.S. program is arranged according to a series of developmental levels rather than going by a strictly chronological plan. In identifying these developmental levels, the major considerations are the infant's response repertoire at various stages, and the types of incentive which are most reinforcing. Because of the many unknown variables in the child's early perceptual-motor development, intuitive judgments have to be made in initially deciding when the child is ripe for various kinds of sensory input. Another variable that is poorly understood is the role of social reinforcement in stimulation programs. Since no feasible way exists nor is any effort made to eliminate the human factor, this is a variable which remains essentially uncontrolled.

In spite of the many unknowns which exist in our knowledge of early cognitive development, there are some facts supported by research which can serve as guidelines in planning infant curriculum. It is known that vocalizing to the baby makes him more vocal (Luria, 1966; Meier, 1969a). Simple as this principle may sound, its application is the cornerstone of any infant education program. One practical suggestion to help accomplish this is to equip the parent (learning facilitator) with an infant backpack which enables the parents to talk with the infant rider while doing routine household chores. Another simple, but equally important, principle is that smiling, playing with, and socially responding to the baby make him more alert and socially responsive. Giving him an opportunity to practice his emerging sensorimotor skills will help him learn about himself in space, and also give him variety in color, form, pattern, shadow, and movement. In fostering speech, it is known that associating words with as many actions and stimulus qualities as possible facilitates learning. Another item of significance gained from recent research (Bower, 1966; Fantz, 1965) is that infants are capable of perceiving in all modalities from a very early age. This knowledge that the infant can register all sensory input, even if he can't process it in the same way that adults do, represents a tremendous advance. The research findings on stimulus parameters such as novelty and complexity (Fantz, 1967; Friedlander, 1968; McGall & Kagan, 1967) also provide helpful guidance.

It is well to keep in mind the caution against overstimulating the infant, and trying unwisely to speed up those processes which must wait for nature's timeclock. While it has been shown that the infant has built-in protection against information overload in the form of the stimulus barrier (Benjamin, 1965), caution must be used in introducing new experiences and tasks only when the child has demonstrated readiness. Another caution that must be exercised in the design of the I.E.S. is that it not be simply a coaching device to prepare babies to pass items on the developmental scales. Such an approach is analogous to a high school education consisting of drilling on all the items which might occur on the College Board Exams. Although it is impossible to avoid the use of the blocks, rattle, ring and other familiar items used in the developmental exams in planning an infant's curriculum, the goals of their use should be conceptualized as something other than trying to beat the game by teaching the baby to make a 3-cube tower long before Gesell says that normal babies do it. Rather than concentrating on the manipulation of objects per se, one of the earliest goals of the program is going to be to get the baby to attend and respond to the human face as a distinctive stimulus. Kagan (1968) has observed that as early as four months of age there are significant differences in the attentional responses of lower- and middle-class children. Although the lower-class babies attended visually to a drawing of a human face for as long as middle-class babies, they did not show a deceleration in heart beat, which has been shown to be a physiological correlate of attention (Lewis, et al., 1966). Kagan suggests that this finding is due to the fact that the face is not a distinctive stimulus for the lower-class infants, because they have not experienced repeated presentations of the mother's face smiling down at them against a background of quiet. Because of crowded living conditions and other factors, the lower-class infant has experienced the mother's face under more confusing stimulus bombardment (the television blaring, other siblings' voices and faces, etc.) and has not formulated it as a distinctive schema.

In structuring the early environment of the environmentally deprived child, it is important to recognize that the problem is often not a lack of stimulation, but rather a lack of appropriate circumstances in which to organize and assimilate stimulation (Deutsch, 1968). The idea is not to indiscriminately bombard the baby by attaching bright, moving objects and noise makers to his crib. Since the noise level around his crib is probably already too high, what is important is to provide a quiet background against which he can attend to and integrate new, carefully programmed educational experiences.

Since the foundation and necessary prerequisite for the baby's learning experiences is a trusting relationship with his learning facilitator, the importance of the early establishment of affectional relationships cannot be overstressed. There is much to be learned from observations of normal, nurturing mothers, and the ways in which they expose their babies to new experiences and communicate with them. One advantage of teaching mothers to set aside portions of the day for playful interaction with their babies is that the fulfillment which the mother experiences in such interactions will probably reinforce the frequency of their occurrence. It is believed that this will initiate a cycle of interactions in which the mother is pleased and rewarded by seeing her baby learn new things, and will seek more of these positive experiences by spontaneously talking to and playing with him more.

If an infant curriculum is to have maximum impact on the culture of poverty it is exigent that it be conceptualized in a simple and highly specific fashion. Very little sophistication can be assumed on the part of the parents, who are the prime facilitators of the infant curriculum. In order to design a conceptual framework for the curriculum, an Infant Education System (I.E.S.) Flow Chart is herein proposed (see Figure 1). The I.E.S. requires that a determination be made of what an infant or child is able to do and at what points along the developmental pathways he either lags behind or deviates from the norms in a noteworthy way. Thus, the learning facilitators, in most cases the child's parents, present the child with a graded series of entry behavior tests in a relatively standardized fashion. A record form is provided and, after it is clearly understood by the learning facilitators, is used to record a child's responses to whatever experiences are presented. The nature and pattern of the behaviors observed in response to the test items serve to identify the appropriate learning episodes to be introduced next as parts of the child's lesson plan. Thus, the series of observable behaviors listed in the diagnostic portion of the educational system serves to key in the learning facilitator to a program of intervention. Each cluster of learning episodes is organized into a hierarchy of tasks which are most probable for attracting and maintaining the infant's interest and for efficacy in enabling him to achieve the desired behaviors.

Some examples of the elaborated flow system are presented in Figure No. 2 which depicts the small portion of Figure 1 that is cross-hatched and elaborates upon it. Based upon the Inventory of Infant Milestones, the learning facilitator is cued into a specific series of learning episodes. For example, if the child's babbling is not developing according to norms, specific experiences are selected and presented to the infant in various ways. If the more elegant crib attachments are not available, less sophisticated and usually more timeconsuming options are available for parents to carry out in person. Since speech is an imitative function, the input is carefully articulated on the automated devices or by the learning facilitator and the child is given ample opportunity to imitate this.

Since many of the experiences to which an infant might be exposed can be presented mechanically, Friedlander (1968); Grassi (1968); Kagan (1967);

Lipsitt (1968); Meier (1967 & 1969c); and others have experimented with various infant education content and media for conveying it. As a result of considerable work with new media and the advent of subsequent children in the family, requiring geometrically greater amounts of time per child in spite of a fixed availability of hours in the day, Meier devised several pieces of equipment and used existing as well as developed some new hardware and software for presenting various stimuli to these infants and toddlers. Practically, the first environment which is amenable to controlled intervention and allows observable results is the crib. A series of mechanical crib attachment devices was developed and tested; the control unit, one version of which is shown in Figure 3, is the nucleus of such a system and enables the infant to control much of his environment as described below. Various designs of hardware and an even greater variety of software were tested under relatively controlled conditions. It was the next generation of infant environments subsequent to that which Skinner designed for his own grandchildren. The essential motive for substituting various mechanically mediated stimuli for adult contact is not a mechanistic rejection of the affective domain but rather an attempt to use media to complement and supplement the adult affective and cognitive stimuli which are inevitably diminished with each successive child due to the accumulating demands on a fixed amount of time expressed by the other children in the same home.

The overriding principle guiding the introduction of any new piece of hardware or software is that the infant must be able to control it himself and find it attractive. This is consistent with the notions of an autotelic (intrinsically attractive and rewarding) responsive environment (Moore & Anderson, 1968) which this writer suggests is a cogent rationale for developing positive feelings and the confident knowledge necessary for competent manipulation of one's environment (Meier, 1970a & 1968a; Nimnicht, McAfee & Meier, 1969). The nucleus of the hardware system is an infant-controllable unit by which he can summon adult assistance by pressing a buzzer button; or he can initiate a recorded series of visual and auditory stimuli presented by such devices as a single concept film loop projector, a videotape recorder, an audiotape recorder, a pretuned radio, or other similar devices; or he can administer to himself a pre-determined amount of tactile-kinesthetic sensation by activating a vibrator or a heart-beat simulator; or he can control the level of illumination in the room; or, in the more sophisticated unit, he can even control such things as a fan to circulate the air or a warming pad, or remotely raise and lower the shade on the window. Most of the devices can be equipped with time delay switches to allow them to run a predetermined length of time and then turn off; they have to be reactivated by the infant to continue and a counter indicates how autotelic certain items are.

All of the auditory, visual and tactile-kinesthetic stimuli are controlled by a unit that is easily reached and manipulated by the infant, even while lying on his back or side in the crib or playpen. In addition, several interchangeable manipulanda are singly dangled over the child within his reach and when pulled can either activate a sound such as a bell or buzzer or can activate a motorized mobile suspended over the crib. Thus, the infant learns to control a certain amount of the environment and is the active recipient of various carefully selected stimuli programmed for his optimal learning. The format of the new educational program entitled "Sesame Street" is a good example of the kind of approach which is appropriate for presentation to the infant. Similar material with considerable redundancy is what comprises the software programs which are available to the learner; Friedlander (1968 and 1969) has clearly documented that infants prefer a certain amount of redundancy. Counters are used to determine the number of times each stimulus is selected and as a child's rate of selection per unit of time peaks and begins to fall off, the content of that particular modality's stimulation is altered by replacing the now monotonous item with a novel and presumably slightly more complex experience. The learning facilitator (parent) is responsible for making these selections according to the instructional system and his/her own intuition regarding the child's response to previous stimuli. The learning facilitator is also instructed to reinforce any efforts the infant learner makes toward imitating the sounds or identifying the visual items, etc. The learning facilitator has a series of language and sensory-motor-perceptual tasks to perform with the infant in addition to keeping the hardware properly programmed with the available software, whose contents have already been empirically validated (see Figure 4 for sequence) or at least theoretically conceptualized to conform with the overall instructional system. Of course, the materials become progressively more complex and the training of the learning facilitators is necessarily continuous. Hence, the learning facilitator is an integral link in the chain of curriculum development and the training which these parents receive is a critical factor in the success or failure of a sensitively responding environment and Infant Education System.

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FIGURE 1.

INSTRUCTIONAL SYSTEM FLOW CHART

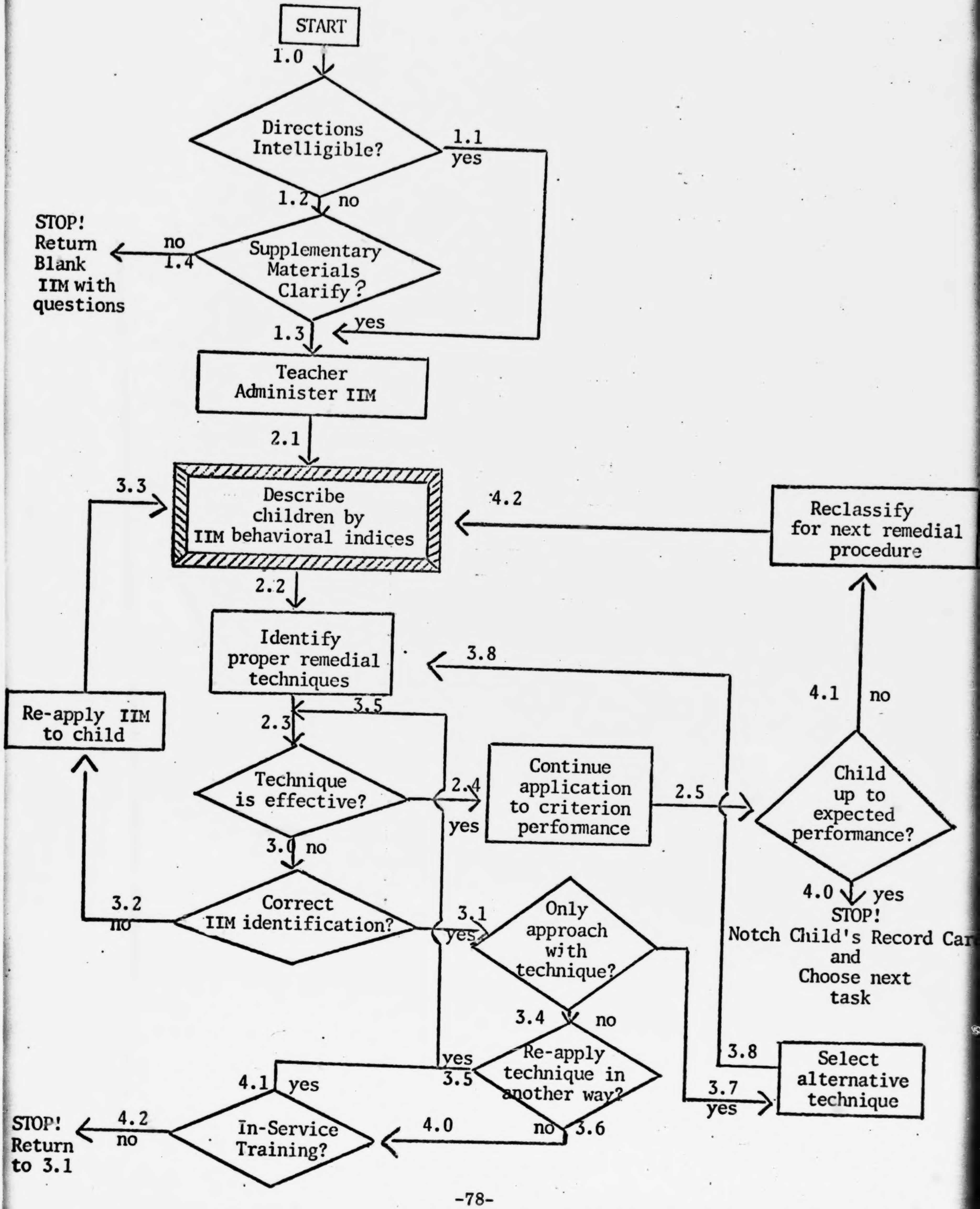
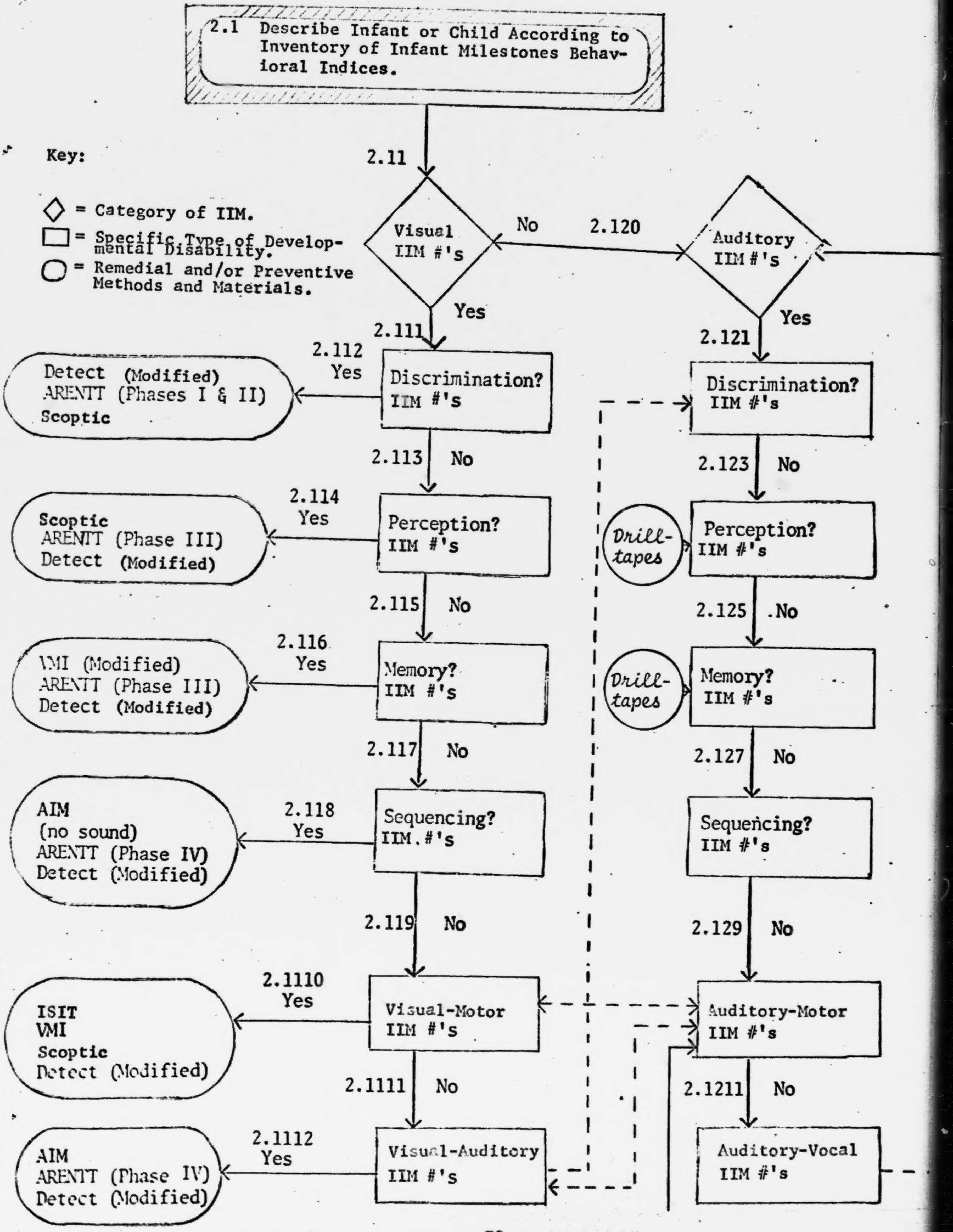
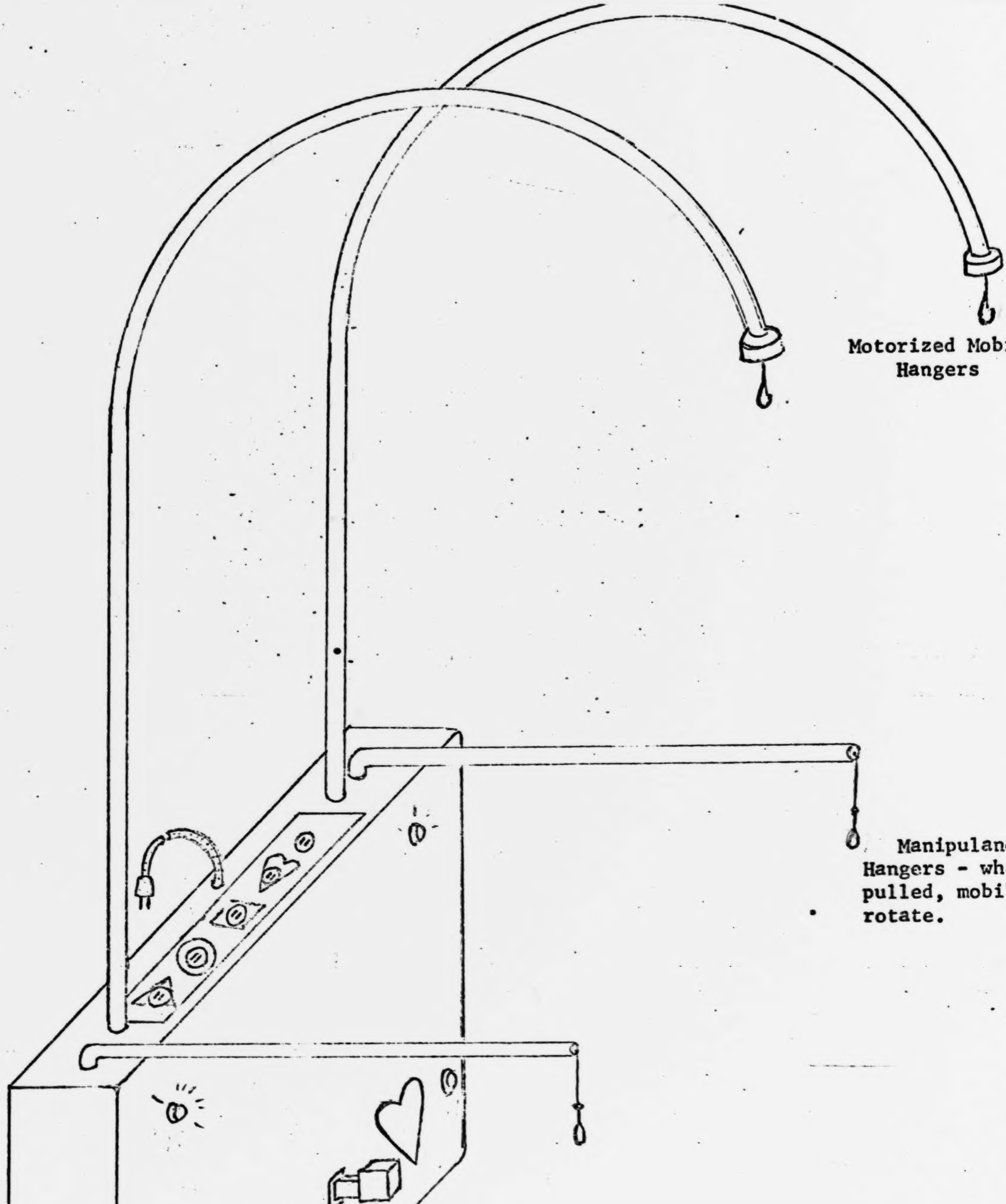

START
1.0
Directions Intelligible?
1.1
yes
1.2
no
STOP! Return Blank IIM with questions
no
1.4
Supplementary Materials Clarify?
yes
1.3
Teacher Administer IIM
2.1
3.3
Describe children by IIM behavioral indices
4.2
Reclassify for next remedial procedure
2.2
Identify proper remedial techniques
3.8
4.1
no
Re-apply IIM to child
3.5
2.3
Technique is effective?
2.4
yes
Continue application to criterion performance
2.5
Child up to expected performance?
3.0
no
4.0
yes
STOP! Notch Child's Record Car
and
Choose next task
3.2
no
Correct IIM identification?
3.1
yes
Only approach with technique?
3.4
no
3.8
Select alternative technique
yes
3.5
Re-apply technique in another way?
3.7
yes
4.1
yes
STOP! Return to 3.1
4.2
no
In-Service Training?
4.0
no
3.6

FIGURE 2. PARTIAL VISUAL AND AUDITORY SUBSYSTEMS OF MASTER INFANT EDUCATION SYSTEM.


2.1 Describe Infant or Child According to Inventory of Infant Milestones Behavioral Indices.
Key:
◇ = Category of IIM.
□ = Specific Type of Developmental Disability.
○ = Remedial and/or Preventive Methods and Materials.
2.11
Visual IIM #'s
No
2.120
Auditory IIM #'s
Yes
2.111
Yes
2.121
2.112 Yes
Detect (Modified)
ARENTT (Phases I & II)
Scoptic
Discrimination? IIM #'s
Discrimination? IIM #'s
2.113 No
2.123 No
2.114 Yes
Scoptic
ARENTT (Phase III)
Detect (Modified)
Perception? IIM #'s
Drill-tapes
Perception? IIM #'s
2.115 No
2.125 No
2.116 Yes
VMI (Modified)
ARENTT (Phase III)
Detect (Modified)
Memory? IIM #'s
Drill-tapes
Memory? IIM #'s
2.117 No
2.127 No
AIM
(no sound)
ARENTT (Phase IV)
Detect (Modified)
2.118 Yes
Sequencing? IIM #'s
Sequencing? IIM #'s
2.119 No
2.129 No
2.1110 Yes
ISIT
VMI
Scoptic
Detect (Modified)
Visual-Motor IIM #'s
Auditory-Motor IIM #'s
2.1111 No
2.1211 No
2.1112 Yes
AIM
ARENTT (Phase IV)
Detect (Modified)
Visual-Auditory IIM #'s
Auditory-Vocal IIM #'s



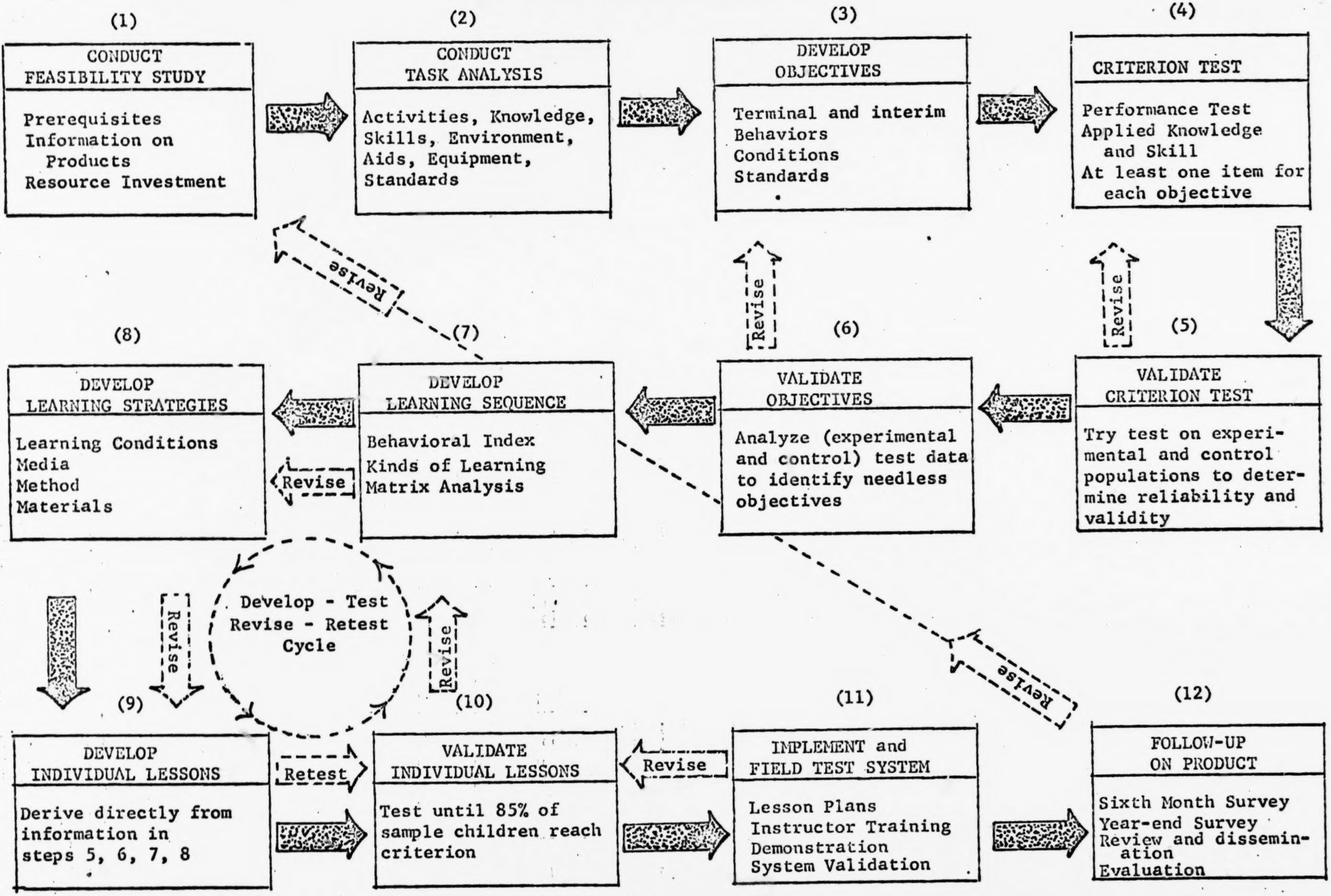
Motorized Mobile Hangers

Manipulanda Hangers - when pulled, mobiles rotate.

Series of controls for activating various attachments.

FIGURE 3. CRIB APPARATUS - CONTROL UNIT
Designed, built, and pilot tested by John Meier, 1968.

FIGURE 4. INFANT EDUCATION CURRICULUM
PROGRAM PRODUCT DEVELOPMENT SYSTEM*


(1)
CONDUCT FEASIBILITY STUDY
Prerequisites
Information on Products
Resource Investment
(2)
CONDUCT TASK ANALYSIS
Activities, Knowledge, Skills, Environment, Aids, Equipment, Standards
(3)
DEVELOP OBJECTIVES
Terminal and interim
Behaviors
Conditions
Standards
(4)
CRITERION TEST
Performance Test
Applied Knowledge and Skill
At least one item for each objective
(5)
VALIDATE CRITERION TEST
Try test on experimental and control populations to determine reliability and validity
(6)
VALIDATE OBJECTIVES
Analyze (experimental and control) test data to identify needless objectives
(7)
DEVELOP LEARNING SEQUENCE
Behavioral Index
Kinds of Learning
Matrix Analysis
(8)
DEVELOP LEARNING STRATEGIES
Learning Conditions
Media
Method
Materials
Develop - Test
Revise - Retest
Cycle
(9)
DEVELOP INDIVIDUAL LESSONS
Derive directly from information in steps 5, 6, 7, 8
(10)
VALIDATE INDIVIDUAL LESSONS
Test until 85% of sample children reach criterion
(11)
IMPLEMENT and FIELD TEST SYSTEM
Lesson Plans
Instructor Training
Demonstration
System Validation
(12)
FOLLOW-UP ON PRODUCT
Sixth Month Survey
Year-end Survey
Review and dissemination
Evaluation
Revise
Revise
Revise
Revise
Revise
Revise
Revise
Revise
Retest

*Adapted from Butler, C., Job Corps Instructional Systems Development. RMEL, 1967, p. 48

HEAD START: YESTERDAY, TODAY, AND TOMMORROW

By James S. Payne
Walter J. Cegelka
John O. Cooper

Introduction

Interest in preschool education is at an all-time high as a result of the Office of Economic Opportunity's (O.E.O.) Operation Head Start programs. Teachers in early childhood development and early childhood education have long realized the importance of working with preschool children, but not until recently has the general public shared this interest. It is generally accepted that preschool educational programs benefit all children, regardless of race, color, creed or economic level, but the current emphasis is on culturally disadvantaged children. A common pattern is evident in children from disadvantaged families. They enter school without the experiences necessary for school success. They fall further and further behind until they drop out of school to return to their homes to rear the next disadvantaged generation (Nimnicht and Meier, 1966). The purpose of Head Start and other preschool programs serving disadvantaged children is to break this cycle. The term "Head Start" was coined because "If disadvantaged children were to profit from what the schools had to offer, it was argued, then they need a 'Head Start' in order to catch up with middle-class children (Elkind, 1969)." Since the inception of Head Start in 1965, 150 articles directly related to the subject have been printed in professional journals. This program has also been the subject of numerous doctoral dissertations. The purpose of this paper is to review various studies of Head Start and present them in a meaningful sequence with brevity and clarity. Although the review of literature is not exhaustive, there is a representative sample of studies. They are grouped in the following categories: Chronology of Events, Program Description, Evaluation, Parent Involvement and Test Results.

Chronology of Events

Head Start began during the summer of 1965 as a part of the President's War on Poverty administered through the newly created Office of Economic Opportunity. The first Head Start Publications were case studies and success stories. Typical examples include:

> "...five-year old boy whose life was saved because a Head Start medical examination detected a serious heart disease... Eastern Ohio dentist closed his door to Head Start staff seeking his paid services and three days later volunteered to be the Dental Director.....Head Start center was burned to the ground and today a new one stands in its place, built entirely by volunteer community efforts (Richmond, 1967)." "...many of the youngsters responded to the question, 'What does a policeman do?' with such answers as 'arrest you,' 'puts daddy in jail,' or 'shoots people.' For most, this answer was changed to 'helps you' or 'is your friend.' ...One (teacher) was bitten by a small frightened boy who wanted to leave after being deposited by an older sister on the first day. Later, however, on a field trip,

he confided, 'You know, I might like you by the time this is over' (Richard, 1966)." "Another volunteer was a seventy-eight-year-old retired librarian who came daily to the centers in one city to read and tell stories to small groups of children or, as she said, 'I sometimes just hold a child in my lap for a while. I can do this, for I have plenty of time.' ...One fifteen-year-old boy who was a potential school dropout worked as an aide and never missed a session (Levens, 1966)." "...to the girl who used to ask for candy and popcorn when we went to town, but now asks for a picture book and crayons (Broman, 1966)."

The Economic Opportunity Act of 1964 (Public Law, 88-452) was divided into seven titles. Heffernan (1965) explained that those interested in applying for funds to develop preschool programs for the disadvantaged should be concerned with Titles II and III. The initial Head Start guidelines were developed by experts in pediatrics, public health, nursing, education, child psychiatry, child development and psychology (Richmond, 1966). During June, July and August of 1965, over 500,000 children were served in Head Start classes. The smallest program was in an Eskimo village involving ten children, and the largest program was in New York City involving 26,000 children (Ross, 1966). "In late August President Johnson formally announced the continuation and expansion of the Head Start Program (Richmond, 1967)."

According to the most recent O.E.O. guidelines (1967), the following rules and regulations apply to all Head Start programs:

1) Federal assistance is not to exceed 80 percent of the total cost of the program.

2) Ninety percent of the total enrollment of Head Start students must meet the poverty guidelines.

3) All Head Start programs must comply with conditions of Title IV of the Civil Rights Act of 1964.

4) One hot meal and a snack are strongly recommended to be a part of the daily program.

5) A Central Policy Advisory Committee is to be developed and at least 50 percent of its members must consist of Head Start parents. Parent involvement is continually stressed and emphasized.

6) A medical director is required for all Head Start programs.

7) A Career Development program is required in order to up-grade personnel as well as to provide staff incentives.

8) Transportation is required for all children living beyond walking distance.

Head Start is now considered the most successful of the anti-poverty programs. "If Head Start has been a success, it has been a success at cost. A total of 95 million dollars was spent last summer. ...This works out to about $168 for each child and, since most programs ran for eight weeks, $21 per week.....year-round programs are estimated at $750 to $1,000 per child (Maggin, 1966)."

Well known persons such as Mrs. Lyndon B. Johnson and Vice President Humphrey supported Head Start in its initial stages. Mrs. Johnson said, "Head Start will reach out to one million young children lost in a gray world of poverty and neglect, and lead them into the human family." This quote resulted in various reactions.

Wolff (1967), in responce to Mrs. Johnson's statement, negatively commented that Head Start had "...made a sincere effort in many places..." however, that effort went nowhere. Furthermore, Wolff believed that Mrs. Johnson's statement was ethnocentric. He stated, "If we view one side of the river as a gray world of poverty and neglect and the other as a bright world of affluence and virtue we have already condemned the child's parents, rendered them worthless and burned our bridges before we built them."

Conversely, Richard (1966) reacted positively toward Mrs. Johnson's statement and Head Start in general. Richard said, "Head Start probably has been the most immediately successful and the least criticized of the Community Action programs in the federal government's war on poverty."

Vice President Humphrey (1965) emphasized the future challenge of Head Start. His main thesis was that a successful outcome from the war on poverty is contingent upon educational opportunities. Rioux (1965) explained the potential for educational opportunities contained in the Economic Opportunity Act of 1964, and the Elementary and Secondary Education Act of 1965.

A classic example of Head Start fanfare during its beginning was illustrated by Ross (1966) in an article entitled "Head Start is a Banner Project." A flag was developed to represent Project Head Start and a photograph illustrated the Head Start flag flying beneath the American flag.

About 561,000 children were served during the summer of 1965; 575,000 children were served in the summer of 1966, and 171,000 had been served in full year programs. At this time Head Start was referred to as "the country's biggest peace-time mobilization of human resources and effort (Brazziel, 1967)."

In 1967, articles began to question the lasting effects of Head Start without some type of follow-through program. Shriver (1967) outlined things he felt should be done if Head Start was not to become a "False Start." "...I have outlined a series of six basic steps which must be taken by school systems throughout the country if Head Start children are to get an even chance. The six steps include reduction of pupil-teacher ratios, increased use of teacher aides, tutorial assistance, hot food, participation by parents in actual school situations, and social services to poor families." The follow-through program was designed to carry the benefits of Head Start into the primary grades to insure that Head Start graduates maintained the gains they had made. The importance of follow-through and suggestions for activities to be continued from Head Start as well as suggested new activities are mentioned by Howard (1967), Huggins (1967), and Widmer (1967).

During the latter part of 1968 and early part of 1969, plans were made to move Head Start from the Office of Economic Opportunity into the Office of Health, Education and Welfare (H.E.W.). At this time, heated discussions began to take place between persons either for or against Head Start. Also about this time a study conducted by the Westinghouse Learning Corporation and Ohio University was disseminated. The descriptive and introductive-public-relation articles began to be replaced by opinionated reporting. The Westinghouse Report, as it was later called, evaluated 104 Head Start centers across the country and compared the performances of these children with those of other children in the same schools.

Simply stated, the Westinghouse Report evaluated the effectiveness of Head Start by comparing former Head Start students in first, second and third grades with those of control students who had not attended Head Start. On the first test, "language development," Head Start children did not score significantly higher than the control children. In "learning readiness," Head Start children scored better than the control children, and on the "Stanford Achievement Tests," no differences were found between the two groups. The report concluded that summer Head Start programs were ineffective, and it was recommended that year-round programs should be given priority over summer programs. It was suggested that if programs were to be effective, they would have to last longer, extend downward to infancy and upward into the primary grades; parents should be taught to teach children; more attention should be given to language development, and some Head Start centers should be purely experimental.

The authors of the Westinghouse Report noted limitations in the study. Two limitations were significant. a) The date did not allow for the range of quality difference among the various Head Start centers. b) The entire study was post hoc -- measurements were obtained after the children had been out of Head Start for one to three years.

The news media began to release information indicating that Head Start had failed. Articles appearing in the New York Times carried head-lines such as "Dispute Over Value of Head Start" and "White House Advisers Stand by Report Critical of Head Start Program."

During the transfer of Head Start from O.E.O. to H.E.W. and the controversy of the Westinghouse Report, Eveline Omwake (1969a), President of the National Association for the Education of Young Children, published a brief article in the January issue of Young Children. Typical comments were, "At the close of 1968, after three years of a grand effort, we have to face the reality that the once promising Head Start project has already begun to go down-hill. ...negative effects are by now clearly observable. ...One can speculate that with the anticipated budget cuts, with the continued push to involve nonprofessionals in place of professionals and to appoint sketchily trained para-professionals to positions of authority, Head Start programs may contain little else than the children enrolled, angry, frustrated, tired adults, broken crayons, incomplete puzzles, torn books, and diluted paints left over from the halcyon days of early Head Start. ...They [federal agencies] muffed it when they began to exploit the children's programs to bolster the economy (pp. 130-131)."

Omwake's comments triggered a response from Richard Orton (1969a), Associate Director of Project Head Start. It appeared in the March issue of Young Children. Orton defended Head Start with some salient facts, and the two articles (Omwake, 1969b; Orton, 1969b) reappeared back to back in the March, 1969, issue of Voice for Children.

All data are not in. The true effectiveness of Head Start remains in question. As of July 1, 1969, Head Start programs are administered under H.E.W. through the newly created department of Office of Child Development.

The ex-Head Start chief, Jule Sugarman, has been appointed Acting Director of the new office and he now reports directly to the secretary of H.E.W., Robert Finch.

Program Description

Much of the initial Head Start reporting was descriptive in nature. The purpose was to provide information about programs or about a specific segment of a program. A good capsule description of programs serving preschool disadvantaged children was given by Krown (1968). Krown's comments pertaining to Head Start were brief, specific and positive. "I found Project Head Start amazing in the high standards it has set for the centers it supports." She goes on to mention that low pupil-teach ratio, use of auxiliary personnel, teacher training, role of the parents and the use of volunteers and neighborhood workers are all commendable for a program such as Head Start.

Head Start was reported as flexible and adaptable to individual situations and communities. "Each center has been able to maintain an individuality and flexibility unique in federal programs. This in turn has been responsible for the enthusiasm which in hard terms is an intangible, but nevertheless a specific of the programs' success. ...Within the total Head Start objectives, communities are encouraged to develop programs that are uniquely theirs, that reflect the most effective use of resources available to them (Richmond, 1967)."

There were as many different philosophies as there were communities and programs. The form and type of educational approach was and still remains far from standard. Well-known authorities in the field of early childhood education such as Francis Palmer of the City University of New York, Montessori schools, Martin Deutsch's school at the Institute of Developmental Studies in New York, Carl Bereiter's school in Illinois, Susan Gray's program at George Peabody College for Teachers in Nashville, Bank Street College of Education in New York City and Nimnicht's program in Colorado do not necessarily agree on exactly what to teach, much less how to teach culturally disadvantaged children.

Although Head Start programs operate differently, have different philosophies and different session lengths, there are some areas of commonality. Most authorities agree that the purpose of Head Start is to break the poverty cycle and to create change, change not only in the individual, but also in the community. Most people believe that we are obligated to do something for disadvantaged youth. But disadvantaged children are difficult to diagnose because of disagreement in selection criteria (Cegelka and Thomas, 1968). The federal government considers a child to be disadvantaged if he is a product of a low-income family. In 1964, a poverty family was one with an annual income of $3,000 or less before taxes (Witmer, 1964). The Office of Economic Opportunity has developed various poverty income guidelines, the most recent of which is found in Table I.

Head Start programs also have some degree of similarity in class sizes. Class sizes range from 15 to 20 students and paid personnel in a class range from two to four staff members plus unpaid volunteers (Doherty, 1966; Osborn, 1967). A multidisciplinary approach usually includes a Program Director, Director of Education, Director of Medical Services, Social Worker, Psychologist, Nurse, Coordinator of Volunteer Services, Home Economist, Parent Educator, Counselor, Speech Therapist and various Aides.

TABLE 1

Office of Economic Opportunity Poverty Guidelines
for 1969 (CAP Announcement 68-17)

Family Size	Non-Farm	Farm
1	$1,600	$1,100
2	2,100	1,500
3	2,600	1,800
4	3,300	2,300
5	3,900	2,800
6	4,400	3,100
7	4,900	3,400
8	5,400	3,800
9	5,900	4,100
10	6,400	4,500
11	6,900	4,800
12	7,400	5,200
13+	7,900	5,500

It is generally assumed that children under six years of age are educable. Most authors of Head Start articles believe that IQs are flexible (Goldsmith, 1965), although Jensen (1969) has questioned the concept of flexible IQ. Jensen's article has stimulated some controversy among Head Start circles and the general public has once again been reminded of the nature vs. nurture controversy in such publications as "Born Dumb?" (Newsweek, 1969), "Books - What Can You Expect" (New Yorker, 1969), and "Intelligence: Is There a Racial Difference?" (Time, 1969).

In summary the common features of Head Start programs are:

1) Belief in breaking the poverty cycle and making change in the individual and community.
2) Service to disadvantaged children who are products of families that meet O.E.O. poverty guidelines.

3) Belief that young children can be helped to learn.

4) Emphasis on parent involvement and development of a Central Policy Advisory Committee composed of at least 50 percent parents.

5) At least one hot meal per day.

6) Medical and dental program.

7) Low pupil-teacher ratio.

8) Development of a Career Development Committee to up-grade staff and provide incentives.

9) Extensive use of volunteers.

There are many common aspects among Head Start programs; however, broad differences appear in curriculum, techniques and methods for handling children, equipment, materials and supplies available, facilities used, professional staff training, salaries, age of children, recruitment and screening process of children, community variables, and racial balance. However, there is some agreement about the need for speech and language training. As mentioned earlier, the Westinghouse Report recommended more attention be given to language development.

Risley (1968) emphasized the importance of language and stressed the value of children speaking to the teacher in the morning when entering the classroom. Several case studies illustrating the manipulation of appropriate and inappropriate verbal responses of Head Start children are mentioned in the Evaluation section. Those studies used behavioral management techniques. Olsen (1968) reported how language could be taught to children while they rode the bus. A speech and language screening test was developed in a Head Start program in Washington, D.C., by Monsees and Berman (1968). Clark and Richards (1966) found that Head Start children made significantly more errors than nondisadvantaged children on the Wepman Test of Auditory Discrimination. This may indicate why some disadvantaged children have language deficits.

Studies of curricular aspects other than language development were mentioned by Lehew (1968), Goolsby (1968) and Hildebrand (1967). Lehew reviewed various studies demonstrating arithmetic abilities of young children and compared them with Head Start children of LaMesa, California. Goolsby found that Head Start children that were read to and questioned with no feedback about answers did less well when compared with either Head Start children who were given feedback or Head Start children who were not questioned at all.

Field trips are assumed by Head Start officials to be beneficial for all yound children. Hildebrand (1967) explained a sequential plan to use for getting the most out of a field trip.

Brazziel (1967) was one of the few authors who outlined a tentative daily schedule and explained typical daily activities. Biber (1967) was one of the few who described the characteristics of Head Start children and various types of traditional activities that needed to be included in a Head Start program.

Regardless of the similarities and differences of Head Start programs, three distinct types do exist:

a) Full Year Head Start - Part Day: This program operates up to six hours per day for at least eight months a year. There are usually two shifts of children. One group is served in the morning and the other in the afternoon. Each shift is served for no less than three hours per day.

b) Full Year Head Start - Full Day: This program operates more than six hours per day for at least eight months a year and is usually referred to as Day Care, serving children from families whose parents are working or are in employment training.

c) Summer Head Start: This program must operate for at least an aggregate of 120 hours and is generally limited to children who will attend regular school for the first time in the fall.

A few reports describe specific Head Start programs:

Evens (1968) discussed Head Start programs in Alaska; Shannon, Horne, James and Johnson (1966) discussed the various programs in North Carolina; the early beginning of the Staten Island Head Start program was mentioned by Silberstein, Chorost, Mitchell, Blackman and Mandell (1966); Enzmann (1966) discussed the Detroit program; Stillwell and Allen (1966) explained the Champaign, Illinois program and the Tucson, Arizona program; and the Mississippi Head Start programs were explained by Robinson (1965).

Programs that differ from the traditional Head Start concept are: the New Haven, Connecticut program (Kaplan and Colombatto, 1966) for siblings of mentally retarded children; the Milford, New Jersey program (Andronico and Guerney, 1969) emphasizing the need for a psychotherapeutic aide; the Parent Cooperative Preschool of Kansas City, Kansas, which is staffed by Head Start mothers (Jacobson, Bushell and Risley, 1969); the

Head Start Demonstration Classroom in Seattle, Washington, for problem children (Haring, Hayden and Nolen, 1969); and the mobile preschool used in southern California (Lipson, 1969).

The frustration of conducting an innovative or non-traditional Head Start Program was reported by Freis, Miller, Platt and Warren (1968). They proposed to place 40 low-income children in five middle-class nursery schools. This program was reportedly rejected "...because our [Freis'] basic philosophy conflicted with the Head Start guidelines." The two major guidelines not observed in Freis' proposal were the 90:10 ratio of low-income children to middle-class children and the 15 hours of school attendance per week for all children. However, according to Freis et al., the greatest obstacle for conducting a non-traditional Head Start program was a lack of communication and interest among agencies. "We were left with the feeling that what was really wanted in programs was nothing imaginative or innovative."

A specific Head Start function is illustrated in down-to-earth terms by Canter and Feder (1968) when they explain the factors encountered by Head Start psychologists. "In one week, for instance, the psychologists' hourly rate was changed without notice, half-day classes changed to full-day programs, psychologists were told to prepare certain research for Washington, and psychologists were told to assume in-service training functions. In the next week the salary rate was again changed, the research idea was dropped, the in-service training was dropped, and the psychologists were told to prepare a plan for evaluating borderline teachers. This running description of week-to-week changes could be extended indefinitely and would include myraid personnel shifts, change of quarters and new role definitions for psychologists.

Ultimately the battle-hardened psychologist learns two things: first, do not handle any new assignment too quickly, for by next week it may be reassigned or forgotten; second, keep your cool and do the important work of child evaluation and staff consultation while swaying slightly in the hectic breezes of change constantly flowing about." Although there are similarities in various Head Statt programs, in practice the programs are more different than they are alike.

Evaluation

The effectiveness and value of Head Start is measured in many ways. The two most common procedures are a) evaluation of group data, and b) evaluation of individual subject data. The evaluation of group data, sometines referred to as an intervention technique, uses some type of standardized test at the beginning of the program year and the same test at the end of the year to determine group changes. The evaluation of individual subject data is presented primarily by persons interested in behavioral management. Data are usually presented in graphic form on individual subjects indicating changes in rate of performance of various types of behavior.

The following are abstracts of studies employing group data to evaluate the effectiveness of Head Start:

Presently the most comprehensive evaluation, or at least the study using the largest population, is the Westinghouse Report which was explained in the section Chronology of Events.

Howard and Plant (1967) evaluated the Head Start program at the Mayfair School in San Jose, California. The Stanford-Binet Form LM, Peabody Picture Vocabulary Test Form A, and the Pictorial Test of Intelligence were administered to the Head Start children on a pre-post basis with a retest interval of 90 to 120 days. All tests resulted in significant gains. The Head Start subjects were matched with a control group on sex, age, parental occupation and parental ethnic-racial orgin. When compared on the three intelligence tests, the Head Start children scored significantly higher on the Peabody Picture Vocabulary Test and the Pictorial Test of Intelligence. An umpublished test was also used which resulted in Head Start children scoring significantly higher on a performance scale.

Lessler and Fox (1969) conducted a series of pre and post tests "...to look for areas in which Head Start efforts may have had an effect." An experimental group consisted of 20 white and 20 Negro Head Start children. Ten white and ten Negro children, who qualified for Head Start but were not enrolled, served as a control group. The subjects were evaluated on school expectations, visual motor coordination, ability to understand, remember and carry out instructions, verbal influency, gross motor coordination, picture interpretation, paragraph interpretation and ability to communicate ideas. A rating scale was employed by three teachers for data collection. Lessler and Fox indicated that examiner bias was an uncontrolled variable. Significant gains were reported for the Experimental group in increased sensitivity and receptiveness to verbal and attending behavior. Negro Head Start children demonstrated an increase in apparent understanding of orally presented materials; and an improvement in verbal skills. The Experimental group in general developed a more positive anticipatory attitude toward school.

Ozer and Milgram (1967) conducted a follow-up study of 40 Head Start children. The children were evaluated with standard psychological tests, a neurological battery and a "School Readiness Evaluation" one year after leaving Head Start. When Head Start children were compared with non-Head Start children, no differences were found.

Cawley (1968) reported a study on full year Head Start subjects. The subjects were categorized into three different intellectual levels based on the Stanford Binet Form LM. Cawley collected pre and post test dated with the Detroit Tests of Learning Aptitudes. The results suggested that although mentally retarded subjects benefit from Head Start programs, the gains were of a lesser magnitude than non-retarded Head Start children.

Rieber and Womack (1968) conducted a study where 568 Negro, Latin American, and Anglo Head Start children were given the Peabody Picture Vocabulary Test. The average IQ's were 69.0, 50.3 and 85.0 respectively. The children who scored in the lowest quartile were compared with those in the highest on many economic and family variables. Significant differences were found associated with income and educational level of parents, size of family, and maternal employment. Approximately one-fourth of the children were retested during the seventh week of the seven week summer program (five week interval between pre and post tests) and all racial groups showed significant IQ gains. When the highest quartile group was compared with the lowest quartile group, both equally benefited from Head Start. The data are somewhat contradictory to the findings of Cawley (1968).

Zigler and Butterfield (1968) investigated the effects of motivation on IQ changes in culturally deprived children. Pre and post data were collected with the Stanford Binet Form LM. Their results indicated that children participating in the program showed significant increases in IQ scores; however, the increases were attributed to motivational factors rather than cognitive factors. The authors indicated that the importance of working with motivational aspects should not be underestimated because they are as important as intellectual deficits. "In trying to improve the deprived child's general level of performance, it would appear at least as important to attempt to correct his motivational inadequacies by developing nursery programs geared specifically toward changing his adverse motivational patterns as it is to concentrate on teaching cognitive skills and factual knowledge."

Hyman and Kliman (1967) reported a follow-up study on children who had demonstrated initial IQ gains upon graduation from Head Start. After completing a year of kindergarten in public schools, twenty subjects were compared with controls on the Metropolitan Readiness Test. The results indicated that there were no significant differences between the two groups. Also after a year of kindergarten, the Head Start children were still disadvantaged even after initial gains had been shown.

Pytkowicz and Seide (1968) reported a study pertaining to the progress of 18 children who had failed Head Start. However, the children participated in one of two types of summer Head Start programs for remediation. The results indicated that all of the children who previously failed Head Start but attended the summer remedial programs passed kindergarten. IQ and receptive language gains were maintained.

Mann and Elliott (1968) conducted a study on rural children enrolled in a Head Start program in Oklahoma. A process of randomization was used to select two groups. One group was tested at the first of the summer session. The second group was tested seven weeks later at the end of the session. The tests included the Columbia Mental Maturity Scale, Peabody Picture Vocabulary Test, Vineland Social Maturity Scale, and the Goodenough Draw-a-Man Test. The pre and post results from groups I and II indicated that the experiences offered by Head Start had a substantial effect on the cognitive functions of the children.

In an article by Osborn (1967), often quoted unpublished studies were cited. For example, the Pierce-Jones Study was said to report that first grade teachers found Head Start children more proficient in learning, more intellectually curious, and better adjusted to the classrooms than non-Head Start children. Eisenberg reportedly found that Head Start children gained 31 to 40 points on the Peabody Picture Vocabulary Test as compared with non-Head Start children. Osborn also mentioned that some results might reveal possible latent effects of Head Start. The Staten Island Study reportedly found that subjects demonstrated fourteen month gains on the Ammons Full Scale Picture Vocabulary Test.

Wolff and Stein (1967) reported a study conducted in New York City. Some of their results indicated that Head Start children tended to be ranked high in their kindergarten classes. Opinions pertaining to the influence of Head Start on the child's initial and later adjustment was varied. There was however almost unanimous agreement by the teachers that Head Start children helped the whole class adjust to the regular school routine. There were no significant differences found between the scores of Head Start children and their classmates in kindergarten as measured by the Pre-school Inventory. Finally, it appeared that in "good" teachers' classes, Head Start children scored consistently higher than non-Head Start children, and in "poor" teachers' classes Head Start children scored consistently lower than non-Head Start children.

Gray and Klaus (1965) reported an "...attempt to offset the progressive retardation commonly observed in the schooling of culturally deprived children ." Forty-four experimental children had intensive work during the summer and received weekly home visits during the rest of the year. This procedure was operative for three years. "Continued tests of intelligence and language indicate that just prior to school entrance the experimental groups showed significant gains (.01), while both a local and a nonlocal control group showed losses."

Fuschillo (1968) investigated the effects of nursery school participation on the intellectual development of children from low - income inner city environments. Two groups of children between three and three-and-one-half years of age served as subjects. One group participated in the nursery school as the experimental group (N=38). The control group (N=69) was not admitted to nursery school, but was followed for comparison. Even though both groups were at the lower end of the socioeconomic scale, subjects were classified into three levels of economic development (high-low, middle-low, and low-low). IQ gains suggested that "...children from the most deprived homes may need at least a two year nursery school experience to get the full benefit of a preschool program, while those from less economically depressed and better organized families may need less." Fuschillo indicated that the children from the high-low level may have demonstrated additional gains if a more challenging environment had been programmed.

Dilorenzo and Salter (1968) reported the first two years of data of a four year longitudinal study. This research was concerned with the effectiveness of academic year programs for disadvantaged preschool children. Experimental and control children were compared by analysis of race, sex and type of program on IQ, language development and reading readiness. Dilorenzo and Salter stated that specific and structured cognitive activities produced greater significant differences than either a "modified Montessori" program, the Edison Responsive Environment Machine, Language Pattern Drills of Bereiter and Engelmann, or small group discussion "...planned to build language skill." Conflicting results were reported for sex differences. The first year data indicated that "...males benefited to a greater extent than did the females." Conversely, the second year data showed that females profited more. Finally, they stated that "...the prekindergarten experience was more effective for disadvantaged whites than for disadvantaged nonwhites, although, as a result of prekindergarten, both experimental groups were significantly different from their control counterparts.

Karnes, Hodgins and Teska (1968) evaluated the effectiveness of two preschool programs. One program utilized a traditional nursery school program. The Experimental Program was structured and emphasized language development and cognitive skills. Each group consisted of 30 socially and economically disadvantaged children. A battery of standardized tests were used for performance measures. Karnes et al., indicated that the experimental procedure was more effective than the traditional program in developing intellectual functioning, language abilities, perceptual development and school readiness.

Weikart (1967) reviewed several different types of preschool programs for culturally disadvantaged children. He categorized the studies into three groups a) traditional, b) structured, and c) task-oriented. He classified Head Start under the general classification of traditional, and concluded that culturally disadvantaged children benefit more from a structured approach emphasizing cognitive and language development. The article is well documented and provides some interesting discussion related to various nursery schools' findings.

Spicker and Bartel (1968) reviewed research related to the effectiveness of preschool intervention programs that demonstrated significant IQ changes. They concluded that "Intervention programs designed to compensate for the specific deficits often associated with deprivation appear to be necessary only for the so called hard core, psychosocially disadvantaged children; more traditional preschool programs appear to be as effective as special intervention programs with children from economically deprived middle class striving families (p. 48)."

After reviewing various Head Start intervention studies, Brazziel (1967) concludes, "Generally speaking, the IQ gains persist where school systems have strong Title I ESEA programs in the lower grades and tail off where this is not the case."

The following are abstracts of studies that employed behavioral management techniques:

Ullmann and Krasner (1965) mentioned that behavior modification grew rapidly after the Second World War. This technology was developed and tested in controlled laboratory environments and then applied to clinical settings. In their book, Case Studies in Behavior Modification, a section is devoted to children. This section illustrates the use of behavior modification techniques with young children. Specific studies involving preschool children were reported. Baer controlled thumbsucking in a five-year old boy. Williams extinguished tantrum behavior in a twenty-one-month old child. Peterson and London reported the treatment of a child's eliminative disturbance. Madsen used positive reinforcement to toilet train a nineteen-month-old girl. Allen, Hart, Buell, Harris and Wolf demonstrated the effects of social reinforcement on isolate behavior on a four-year-old girl. The effects of social reinforcement on crying was reported by Hart, Allen, Buell, Harris and Wolf. Finally, Harris, Johnston, Kelley and Wolf illustrated the effects of social reinforcement on regressed crawling of a nursery school child.

Although behavioral management techniques have been successfully demonstrated with nursery school children since 1960, few articles used Head Start children as subjects. Only two programs have publications illustrating the use of behavioral management techniques with Head Start children. Both are partially supported by Office of Economic Opportunity Head Start Research and Demonstration funds. The two centers are a) University of Washington Experimental Education Unit in cooperation with the Seattle, Washington Public School Head Start program, and b) Juniper Gardens Children's Project in Kansas City, Kansas.

The Seattle, Washington program was described by Haring, Hayden and Nolen (1969). A demonstration classroom was developed to serve children who exhibited severe social, emotional and language deficits. Of the 25 children referred by Head Start teachers, 12 were enrolled up to 43 days. Of the 12 children that were enrolled, only three were in class over 35 days and all of the children reached the behavioral targets that were specified by the teaching staff. Three representative case studies were selected to illustrate the behavior modification designs, the behavioral targets and the modification procedures. The types of behaviors under concern were accelerating attending to task, pupil verbal responses, following directions and decelerating inappropriate motor acts, inappropriate verbal language and spitting.

Several articles using behavioral management techniques have developed from Juniper Gardens Project in Kansas City, Kansas. Hart and Risley (1968) established the use of descriptive adjectives in spontaneous speech by making access to preschool materials contingent upon the use of color-noun combinations. They reported that through traditional teaching procedures the children learned adjective-noun combinations, but the adjective-noun combinations were not incorporated in the children's spontaneous vocabularies until preschool materials were made contingent upon the use of verbalizing color-noun combinations. Jacobson, Bushell and Risley (1969) demonstrated that the rate of switching from one activity to another activity could be adjusted by varying the difficulty or magnitude of a task which the student was required to perform before switching from one area to another. Risley and Hart (1968) conducted a study which appeared to demonstrate that what a child was reinforced to say controlled what he did the next day. This is significant for preschool teachers to know because if this is true, the study indicated that young children can plan ahead and that they can delay gratification. Reynolds and Risley (1968) reported a case study of a four-year-old Negro girl who exhibited an extremely low frequency of talking. The child's rate and content of talking changed when social and material reinforcers were systematically used. The conclusion, however, was that social interaction per se was not the reinforcer which maintained the increased verbalization rather it was the material reinforcers accompanied by social interaction that seemed to be most effective. Brigham and Sherman (1968) presented a list of English and Russian words and reinforced the imitation of English words but never reinforced the imitation of Russian words. It was found that the subjects improved in their never-reinforced imitation of Russian words as well as the reinforced English words, indicating that it was not necessary to differentially reinforce every imitative verbal response.

The intervention studies using group data indicate that Head Start is beneficial in raising group means on standardized tests like the Stanford Binet Intelligence Scale and the Peabody Picture Vocabulary Test, but after a year or so the gains seem to be minimized because of the improvement shown by non-Head Start children. The studies using behavioral management techniques demonstrate that various behaviors can be modified with a carefully planned and executed program.

Parent Involvement

The role of the parent is an extremely important factor in a child's development. Risley (1968) developed a program to teach parents how to teach their children. He found that Head Start parents tend to exhibit a high rate of nagging behavior when working with their own children; however, after working with the mothers in a structured teaching program, their rate of praising increased and the rate of nagging decreased. It is interesting that mothers were less punitive with children other than their own. He also found that even after much training, the principles of positive reinforcement were difficult for the mothers to put into practice in an unstructured situation such as free play.

Clarizio (1968) attempted to change the attitudes of Head Start mothers toward school personnel, school policy, pupil-teacher relations and toward readiness activities of educational value. The study revealed that in most cases the attitudes were in the direction hypothesized, but none were statistically significant.

The value of parent conferences with Head Start mothers was explained by Glickman (1968). Wolff (1967) presented a case for the parent and community to become partners in the educational system, and Broman (1966) cited several examples of how parents had positively reacted and benefited from Head Start. Osborn (1967) listed attitude changes in parents and teachers as one of the four major gains from Head Start. "Head Start teachers found that parents do care and parents learned that teachers do care. ...I believe the future will show that Head Start and community action programs in general have reestablished the role of the parent as a partner in education."

Radin and Weikart (1967) gave a detailed description of a home-teaching program for culturally disadvantaged children. Poor lighting was found in 50 percent of the homes, and temperature extremes were reported as a lesser problem. The parents actively participated in the program, but, "Although the project has been successful in changing their patterns of behavior." Two unexpected findings were that a) children living in public housing did less well than those living in non-public housing, and b) Head Start children involved in a home teaching program with other siblings did less well than Head Start children involved in a home teaching program that were taught alone.

This section can best be summarized by quoting Spicker and Bartell (1968). After reviewing several studies related to the effectiveness of preschool intervention programs serving the disadvantaged, they stated

"...whether or not the home intervention enables the children to perform better in school remains to be demonstrated by further follow-up research."

Test Results

Some studies used standardized tests to explain the characteristics of Head Start children. Others revealed validity data on standardized tests using culturally disadvantaged children as subjects and some studies included new and unfamiliar tests.

Datta (1967) reported that ethnic group and sex did not affect IQ scores or congruent validities of the Draw-A-Person test. A national representative sample of 956 children enrolled in full-year Head Start were administered the Draw-A-Person test (D.A.P.), Peabody Picture Vocabulary Test (P.P.V.T.) and the Caldwell-Soule Preschool Inventory (P.S.I.). The coefficients obtained compared favorably with previously reported kindergarten and first-grade middle class children, but the P.P.V.T. and D.A.P. mean IQ equivalents indicated Head Start children performed substantially lower than the normative groups.

Hutton (1969) administered the Slosson Intelligence Test (S.I.T.), Sprigle School Readiness Screening Test (S.S.R.S.T.) and the Scholastic Test of Academic Readiness (S.T.A.R.) to 68 children during the fourth week of a summer Head Start program. The conclusion was that higher scores are obtained when the S.S.R.S.T. is administered first and the S.I.T. second. The suggestion is that the practice effects are negative for the S.S.R.S.T. but positive for the S.I.T.

Blazer (1968) reported psychological testing on 45 Head Start children in Savannah, Georgia. The children were selected (from over 500 enrolled in the program) by routine screening devices and recommendations from teachers and other professionals. The data from many different tests is presented in graphic form. The major finding was that aggressive, hyperactive children were more numerous than shy, withdrawn children. The importance of the study is the emphasis placed on early detection of problems.

Rosenberg and Stroud (1966) reported in a study supported in part by O.E.O. funds that the Peabody Picture Vocabulary Test and the Columbia Mental Maturity Scale underestimated the intelligence of deprived kindergarten children. It was also reported that the degree of error was reduced somewhat with children who had undergone some schooling.

Olivier and Barclay (1967) discussed the characteristics of the Stanford Binet (S.B.) and the Goodenough-Harris Drawing Test (G.H.D.T.) protocals. Head Start subjects from the St. Louis area scored in the low normal level of intelligence. Girls were superior to boys, and whites were superior to Negros.

The P.P.V.T. was analyzed by Milgram and Ozer (1967). It was reported that the P.P.V.T. scores were consistently lower than S.B. scores administered to Head Start children enrolled in a six-week program.

Zucker and Stricker (1968) administered the Matching Familiar Figures Test (M.F.F.) to a group of Head Start children and to a group of middle class preschool children. The purpose of the M.F.F. was to determine if the child was reflective or impulsive. Reflective children are defined as those children who have long latency periods and high accuracy scores as compared with impulsive children who have short latency periods and make more errors. A negative correlation between error and latency scores was reported which indicated that accuracy was related to the length of time spent on a problem; the longer it took to respond the greater the chance of the response being correct, the shorter it took to respond the greater the chance of the response being incorrect. In view of the results it was evident that a great deal of guessing took place and the authors recommended that a simplified version of the M.F.F. for preschool youngsters be developed.

Summary

This report reviewed various publications related to Head Start programs. Although the review of literature was not exhaustive, it includes representative samples of studies from all areas of concern. The studies are in five categories: Chronology of Events, Program Description, Evaluation, Parent Involvement and Test Results.

Chronology of Events: Head Start began during the summer of 1965 as a part of the President's War on Poverty, administered through O.E.O. The first publications appearing in 1965 and 1966 were largely descriptive. In 1967 articles began to question the lasting effects of Head Start and the importance of a follow-through program was mentioned. During 1968 and the early part of 1969 two events dominated Head Start publications; a) the release of the Westinghouse Report, and b) the transfer of Head Start from O.E.O. to H.E.W. Present Head Start Programs are administered under H.E.W. through the newly created Office of Child Development.

Program Description: Head Start programs throughout the nation are not standard. Regardless of similarities and differences, there are three types of programs; a) Full Year Head Start - Part Day, b) Full Year Head Start - Full Day, and c) Summer Head Start. Common features of Head Start programs are belief in breaking poverty cycle, service for children who are products of disadvantaged homes, belief that children can learn, emphasis on parent participation, one hot meal per day, medical and dental services, low pupil-teacher ratio, career program for staff and extensive use of volunteers. Broad differences among Head Start programs occur in types of curriculum, techniques and methods used in handling children, equipment, materials and supplies available, facilities used, professional training of staff, salaries, age of children, recruitment and screening process of children, community variables and racial balance.

The curriculum of Head Start is not standardized, but there is some agreement as to the importance of speech and language training. Although speech and language training is a high priority in the curriculum, the methods to be used remain unresolved.

Evaluation: The effectiveness of Head Start is commonly determined by applying an intervention technique of statistically measuring the differences between pre-and post-standardized tests or by applying behavioral management techniques to individual Head Start subjects and charting rates of modified behaviors. The intervention procedure was extensively reviewed and the general conclusions were a) Head Start children initially show significant differences on pre-post standardized tests, and b) non-Head Start children appear to catch up with Head Start children shortly after attending public school. The effects of behavioral management techniques were reported by a program in Seattle, Washington, and a program in Kansas

City, Kansas. The results of the studies employing behavioral principles universally reported attainment in behavioral goals as set by the teachers involved.

Parent Involvement: Parents are recognized as an important part of Head Start and several studies are cited describing types of programs involving the home. However, the effectiveness of home intervention remains to be demonstrated.

Test Results: Culturally disadvantaged children tend to score lower on standardized tests than children from non-impoverished homes and several studies were cited to illustrate the differences. Studies related to how Head Start children score on various tests were cited and the main finding was that the Stanford Binet Intelligence Scale was superior to other tests for predicting school success and measuring intellectual functioning.

Closing Comments

Head Start began with all the fanfare and showmanship that any program could hope for. Five years later it is continuing to receive favorable publicity despite the Westinghouse Report, administrative difficulties and a shrinking budget. There is no doubt that Head Start has been beneficial to many children and parents. The medical program alone has probably been well worth the entire Head Start investment, not to mention the nutritional, dental, parent and educational programs. The apparent success of Head Start should not be taken for granted. Both Goldsmith (1965) and Richmond (1966) express great concern for Head Start by mentioning the similarity between Head Start and the Works Progress Administration (W.P.A.) nursery school program after World War I. The true test of Head Start lies ahead. Someone must demonstrate its effectiveness. It is not unreasonable for the taxpayers to demand some proof that the program does what it is supposed to do. Now seems to be the appropriate time for someone to take a critical look at the existing research and make the necessary changes and adjustments. The changes may very well be made in deciding what to measure and evaluate, or what research design to use, or what measuring tools should be used, or possibly changing the educational program and its goals. The challenge placed before Head Start is to demonstrate its worth and prove its effectiveness. Therefore, Head Start should perhaps redefine and redirect its research.

To provide a conceptually systematic basis for a research direction, it is recommended that personel involved in Head Start education support an experimental analysis of individual behavior. "The analysis of individual behavior is a problem in scientific demonstration, reasonably well understood (Skinner, 1953, Sec. 1), comprehensively described (Sidman, 1960), and quite thoroughly practiced (Journal of the Experimental Analysis of Behavior, 1957 - -) [Baer, Wolf and Risley, 1965]."

Moreover, as a direction for Head Start, it is recommended that the experimental analysis of individual behavior be applied. The practice of an applied behavior analysis is evident in the Journal of Applied Behavior Analysis (1968 - -). Baer, Wolf and Risley (1968) defined the dimensions of this technology. They said that "Obviously the study must be applied, behavioral, and analytic; in addition, it should be technological, conceptually systematic and effective, and it should display some generality." These terms are defined below within the dimensions proposed by Baer et al.

Applied

Applied is not defined by the research procedures used in a study. Rather, the term applied is used to describe research involved with behavior and/or stimuli which are immediately important to man and society (i.e. retardation, crime, mental illness or education). Baer et al., (1968), state that "The non-applied researcher....may study bar-pressing because it is a convenient response for study; easy for the subject, and simple to record and integrate with theoretically significant environmental events." Conversely, the applied researchers may employ bar-pressing which is integrated with a teaching machine. However, it is the programmed stimuli of the machine which are important in an applied analysis.

Behavioral

Applied Behavioral research is concerned with the manipulation of environmental stimuli to get an individual to emit specified responses efficiently and effectively. This implies that the behavioral scientist is interested in what the subject does rather than what he says. That is, unless a verbal response were the variable under analysis.

For a scientific study of human behavior, one should be concerned with physical events. Precise measurement and reliable quantification are important. Since applied research is generally conducted in a social setting, performance measures are often difficult to quantify. However, "Current applied research often shows that thoroughly reliable quantification of behavior can be achieved, even in thoroughly difficult settings (Baer et al., 1968)."

The application of standard laboratory electronic equipment for recording behavior is not always possible in applied research. Therefore, the technology of interobserver quantification is often necessary in data collection. Commenting on the use of interobserver quantification Baer et al. (1968), state that "A useful tactic in evaluating the behavioral attributes of a study is to ask not merely was behavior changed? but also, whose behavior?" It is possible that the observer's behavior had changed rather than the subject's behavior. "Explicit measurement of the reliability of human observers thus becomes not merely good technique, but a prime criterion of whether the study was appropriately behavioral."

Analytic

Both applied and non-applied behavioral research are envolved with the control of behavior. "The analysis of a behavior, as the term is used here, requires a believable demonstration of the events that can be responsible for the occurrence or non-occurrence of that behavior (Baer et al., 1968)." Essentially, the definition of analytic requires demonstration that the experimenter can accelerate or decelerate a specific behavior at will.

Two designs are commonly used to demonstrate control of a behavior. One is called the "reversal" technique. This technique employs four stages. First, a behavior is measured, over time, until a stability criterion is reached. Second, the experimental variable is applied and evaluated. Third, if a behavioral change is recorded, the experimental variable is altered or omitted to see if the behavioral change was a function of the experimental variable. Fourth, the experimental variable is applied again.

"In using the reversal technique, the experimentor is attempting to show that an analysis of the behavior is at hand: that whenever he applies a certain variable, the behavior is produced, and whenever he removes the variable the behavior is lost. Yet applied behavior analysis is exactly the kind of research which can make this technique self-defeating in time. Application typically means producing valuable behavior; valuable behavior usually meets extra-experimental reinforcement in a social setting; thus, valuable behavior once set up, may no longer be dependent upon the experimental technique which created it. Consequently, the number of reversals possible in applied studies may be limited by the nature of the social setting in which the behavior takes place, in more ways than one (Baer et al., 1968)."

A second design, used to demonstrate control of a behavior, is called the "multiple baseline" technique. This technique is recommended when a behavior appears to be irreversible or when it is undesirable to "reverse" the behavior. To use a multiple baseline technique, a number of behaviors are operationally specified. Then, the behaviors are measured, overtime, until a stability criterion is reached. After stability, the experimental variable is applied to only one of the behaviors, yet measurement is continuous for all specified responses. If an increase or decrease is observed for the behavior associated with the experimental variable, the experimental variable is applied to yet another unchanged behavior rather than reversing the just produced change. If a behavioral change is observed in the second behavior associated with the experimental variable, "...evidence is assuring that the prior change was not simply a matter of coincidence (Baer et al., 1968)." The experimental variable is then systematically applied to still another behavior, and so on. In this way, the experimentor is trying to show that a functional relationship exists between the behavioral changes and the experimental minipulations.

Technological

"Technological" is a term which means that "'...the techniques making up a particular behavioral application are completely identified and described (Baer et al., 1968)." For example, the term social reinforcement by its self is not a technological description. To qualify it as a technological description the components of social reinforcement must be defined -- stimuli, contingency, and schedule of reinforcement. In this aspect, it is not sufficient to say the stimuli will be "teacher praise." The exact verbal responses that will be given by the teacher must be stated. For example, "good," "excellent," or "that is the way." Only the specified stimuli should be given contingent on specified behavior.

Basically to qualify as technological, a reader should be able to replicate the procedure well enough to arrive at the same results reported in the study. Replication should be possible with only a reading of the description.

"Especially where the problem is application, procedural descriptions require considerable detail about all possible contingencies of procedures. It is not enough to say what is to be done when the subject makes response R; it is essential also whenever possible to say what is to be done if the subject makes the alternative responses, R_2, R_3, etc. For example, one may read that temper tantrums in children are often extinguished by closing the child in his room for the duration of the tantrums plus ten minutes. Unless that procedure description also states what should be done if the child tries to leave the room early, or kicks out the window, or smears feces on the walls, or begins to make strangling sounds, etc., it is not precise technological description (Baer et al., 1968)."

Effective

Effective means that the change must be large enough for practical value. The essential criterion of effectiveness is: has the behavior been altered enough to be socially important?

Generality

Generality of a behavioral change encompasses a) durability over time, b) occurs in a wide variety of environments, or c) appears in related behaviors.

In summary, Head Start administrators should be concerned with a precise scientific analysis of individual behavior and cease to operate on intuition if the War on Poverty is to be taken seriously in the areas of preschool education.

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A UTILIZATION OF PIAGET'S THEORY OF COGNITIVE DEVELOPMENT

Mortimer Garrison, Jr., Ph.D.
Department of Educational Psychology
Temple University

The child who fails to meet ordinary expectations at whatever age and in whatever modality brings most strongly into bold relief the relation between theory and curriculum. One is forced to look closely at both the nature of the learner and what is to be learned.

Most educational efforts seem to be aimed at making the presentation of content and its complexity appropriate to the child's capacity to understand. Special education contains a number of examples of a second approach, one which emphasizes hierarchies of exercises - broadly speaking, readiness activities - with or without implications concerning the organization of the nervous system (Kephart, Frostig, Gettman, Doman-Delcato, etc.).

If I understand the Genevean school correctly, an appropriate curriculum is one which provides those experiences in the proper developmental sequence which facilitate the organization of the cognitive structures essential for intelligent behavior. Content in the traditional sense becomes secondary to the analysis of which activities result in the elaboration of schemata. Inhelder (1969) has, in fact, concluded that learning does not take place in absence of the supporting cognitive structures.

The task of the educator then involves the identification of the child's developmental stage, the preparation and presentation of the exercises appropriate for him as he progresses, and by example and actions, constituting a clarifying and motivating force in the process.

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[1] A version of this paper was presented as part of a symposium on pre-school curriculum at the special CEC meeting in New Orleans December 11, 1969.

"In trying to teach a child some general principle or rule, one should, as far as is feasible, parallel the developmental process of internalization of action. That is, the child should first work with the principle in the most concrete and action-oriented content possible; he should be allowed to manipulate objects himself and 'see' the principle operate in his own actions. Then it should become progressively more internalized and schematic by reducing perceptual and motor supports; e.g., moving from objects to symbols of objects, from motor action to speech, etc." (Flavell, J.N., 1963, Pgs. 83-84.)

In working with young children it is quite likely that we shall have many who, if not still at the sensorimotor level, will be in the beginning phases of the concrete operational level. The beginning mode of instruction must then be incorporated in the physical structure, materials and scheduling. Youngsters at the sensorimotor level require all possible support from the program aimed at enabling them to develop the practical group of displacements, object permanency, and the beginnings of the notions of space, time and causality. Piaget holds that the child's task in this period is to begin to internalize actions; to begin the development of cognitive structures. These give rise to what is observed as object permanence, identity, etc. Connor and Talbot (1964) in their program for young educable retarded children emphasized the importance of a regular schedule in developing ideas of time and sequence. This is to say, *the daily sequence should be invariant*. Duration of items may vary, but the sequence should be quite regular.

There must be an opportunity to learn about things from things. They fall, bounce, break, are heavy, cold, wet. It is more than likely that many of the experiences critical for learning are less than socially acceptable ("children of that age shouldn't...," or, "He must first be taught not to mess"). Banta (Garrison, 1968) pointed out that water play for many children can be used as a reinforcer. It may be that the child's intrinsic joy in learning from interesting things accounts for this. However, activities acceptable in a two-year old are thought inappropriate and unacceptable in a six-year old. At the least, the six-year old produces a considerably greater mess or is markedly more capable of pure and simple destruction than is the two-year old engaging in the same activities for, perhaps, the same reasons.

Just as daily activities should be structured as an aid to internal structuring so tasks and materials may be used to achieve similar goals. The Montessori materials may be thought of as programmed. The knobbed cylinders can be replaced in only one order. This may be thought of as the action beginning of seriation and is an excellent example of what Piaget refers to as the logico-mathematical aspect of one's actions on objects. To learn to be neat is not necessarily to facilitate the development of cognitive structures. _Activities must be presented in the sequence appropriate for the child_.

The symbolic function proceeds to develop through imitation and play. A non-verbal child without sensory deficit must have the opportunity to move from the direct imitation of reality to symbolic play. It may be necessary to teach imitation and play. This aspect of a curriculum is not new except in the formal emphasis. Severely retarded, autistic and echolalic children have been taught functional vocabularies via imitation and reinforcement (Baer, Peterson & Sherman, 1967; Lovass, 1966; Risley & Wolf, 1967). There is no necessary conflict between cognitive and reinforcement theories at this level. Piaget (Piaget & Inhelder, 1967) explicitly recognizes that the organism is self-regulating and he has repeatedly emphasized the importance of social correction by one's peers.

Imitation is used in many ways and settings. The point is the utilization of imitation in the developmental sequence described by Piaget (1951). The underlying principle is that found throughout many of the Piagetian sequences. Decentration takes place. The child moves from imitation of his own actions or gestures, to imitation of those not visible to him (facial expressions, for example), to imitation of new models. Note that such a game as "Simon says" requires verbal control of imitative behavior and may be completely inappropriate for the youngster who has not reached the later developments of delayed imitation and symbolic play.

Intervention begins with the teacher obtaining imitation at the child's level through reinforcement. If the child is functioning in early phases of the sensorimotor level, social reinforcement (praise) may not be adequate. Non-verbal communication (love has entered the educational lexicon again), pats, smiles, small bits of food or candy desired by the child may be effective. Activities must be based on the child's own behavioral repetoire until the later sensorimotor stages are reached. One might use large and small movements, calisthenics, crawling over, under and through things. Sounds may be introduced by way of tapes and record players. Teachers have used ascending and descending scales on the piano for years as a way of developing tonal variations in the speech of children with hearing problems. You have also seen the same combination of actions and imitation combined at a higher level with words on Sesame Street. The ways imitation and play may be taught are limited only by our ingenuity. At this level, education has much in common with the physical therapist endeavoring to enable a patient to elaborate his "body image."

In all cases, action comes first, concrete examples and objects follow; pictures, drawings and other symbols including the verbal are last. A picture of an orange is not an orange; it is a representation.

Reversibility must be taught at all levels. In actions, if things are got out, they are replaced within that segment of the invariant sequence of the day's events. Objects which can be taken apart and reassembled may be used.

This concisely reviews the implications of Piagetian theory for youngsters in the sensorimotor or pre-conceptual level of development. It will be noted that there is no indication that these are implications only for special education. Unless it is shown that the young mentally retarded child develops in a manner qualitatively different from the normal child, we can discuss education for the preschool child as applied developmental psychology in the best sense instead of thinking of categories of exceptionality. Children can properly be seen and treated as individuals subject to the same general principles but varying in the extent they can profit from the same information.

Piaget (Piaget & Inhelder, 1967) holds that the development of intelligent behavior depends upon the nature of the organism (the nervous and endocrine systems), experience with things, social interaction and the fact that man can be characterized as self-correcting, as a feed-back mechanism. The task of education is to order experiences available to the child so that the "signal strength" is at its strongest and the amount of "noise" reduced. To the extent that a child's behavior produces random effects little meaningful development is to be expected (Lewis & Goldberg, 1969). Our world being what it is, it is evident that most of us learn how to handle greater or lesser amounts of randomness and ambiguity very early. Piaget's developmental approach offers one method of organizing experiences so that the child will obtain the greatest amount of information from them for his cognitive growth.

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THOUGHTS ABOUT THE BASIC PSYCHOLOGICAL NEEDS in INFANCY AND EARLY CHILDHOOD*

by

Povl. W. Toussieng, M.D.**
University of Oklahoma School of Medicine
Oklahoma City, Oklahoma

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** Professor of Child Psychiatry, Associate Professor of Pediatrics, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma

In a thoughtful paper Dr. D. Russell Davis, (3) Professor at the Royal Infirmary in Bristol, England, recently reviewed the main three theories currently dominating professional views of mental retardation. He showed how a choice of theory does not depend solely on the gathering of scientific observations and data, but also on "attitudes which are essentially political. The theory is thus a set of assumptions, justified by their relevance and usefulness in rationalizing and making more efficient social movements to reform". With great insight Dr. Davis shows that the stimulation theory, which views mental retardation as resulting from a lack of stimulation, a lack of opportunities or deprivation,is predominant in the United States. Here the political attitude is that "the community should do more to create stimulating conditions for its young children and to provide for the deprived". In contrast, the disorder theory, which views mental retardation as a disorder resulting from "the failure of the family to give sufficient protection from stress (i. e. overstimulation) during the critical periods of learning in early childhood", dominates in the United Kingdom. In England political developments in the last twenty years have led to the social welfare movement. Lack of protection of young children means that the security system their parents created was weak and disorganized. Consequently the young child has to cope with stresses which he is not yet equipped to handle and which he nevertheless somehow must survive, often at a tremendous price.

The tremendous body of observations and data now available as a result of direct studies of infants and young children in a very similar way is being viewed very differently by people with varying political views. Project Head Start has been enthusiastically embraced in some communities. It has been kept out of other places, or has been quickly killed if it had been started while no one was looking. The remarkable revival of interest in Montessori techniques in the United States occurs at a time when there is much concern about respecting the individual, but within the limits of conventional law and order. It is fascinating to note, furthermore, that practically everyone in the United States today appears obsessed with the importance of learning. The whole emphasis of all current "enrichment" programs is purely to get kids ready for later academic performance, with little or no interest in the children's emotional and personality development. Apparently it is being assumed that the children, if they just learn as much as possible, also will be as happy and mature as possible. The children's emotional and personality characteristics are being weighed and evaluated almost exclusively in terms of how these characteristics enhance or interfere with learning. Since every school counselor preaches to the children that more learning equals more earning power and more money in a lifetime, it is apparent then that this theory nicely fits a society which believes in capitalism and free enterprise for profit, but considers individual happiness, which would not be based on material possessions, as at best irrelevant, at worst disruptive and subversive.

In studying the referrals to any child psychiatric clinic it is striking how often children are referred because they do not learn or are not working up to what someone else considers to be their capacity. Next children are referred because of behavior which bothers the family, the school or the community. It is much more rare that children are referred because they are unhappy, anxious, depressed or in deep emotional conflict. Children may be referred because they are hateful, withdrawn, insecure, or are unable otherwise to make friends. I do not recall ever having seen a child referred, however, because he had difficulty in loving others. The closest we may come to this is to use Erikson's (4) term of a child lacking basic trust. We know that some autistic children practically from birth on do not interact with the mothering person and even may be difficult to hold. This behavior is usually seen as negativistic, as a refusal, rather than possibly being an inability. Similarly society accepts and respects a teenager much more if he says: "I won't", than if he by saying "I can't" confesses that he feels he lacks the capacity. In a competitive society one may go on strike, but there is no excuse for incompetence.

It is well known that more and more children and young people today drop out of school or out of college. The response of most contemporary adults has been to intensify all kinds of compensatory "special" or "enrichment" programs, which, however, somehow do not seem to improve the situation. Rather than to wonder about our educational system, citizens everywhere now clamor for more compensatory education programs, thus conveying their determination to carry on educational business as usual. Yet Mario D. Fantini, (5) Program Officer of Public Education of the Ford Foundation, recently raised the question whether we should continue to "ready" children to fit them into a traditional but completely obsolete educational process. Fantini objects to the tendency to patch the conventional process with compensatory education. Instead he pleads for compensatory education to be considered the first step in a structural overhaul of the entire educational process.

It is sad, indeed, that even as farsighted a man as Dr. Fantini still is so caught in the educational morass that even he cannot completely pull himself out of it. For while compensatory education programs most certainly respect and recognize the unique qualities of individual students, they, too, are more geared to learning than to emotional and personal development. That this is not enough is not only evidenced by the restlessness and boredom of so many of our students today, but also by the fact that ever younger students all across this country are "tripping" with drugs. Simmons and Winograd (9) in their highly informative book, "It's Happening", state: "There is a feeling among many of the contemporary trippers that insight and self integration can only be won after you have existentially learned the nature of pleasure and experience. --- We pat people on the head for remaining frozen inside themselves. When you are straight you are bored, when you swing you are damned". It emerges strongly from this "that these many young people are seeking back to a reservoir of experience and emotions which they feel their upbringing and their current life circumstances have eliminated altogether, or have made largely unavailable.

At this point many listeners may wonder what all this has to do with the need for early diagnosis and intervention in the management of handicapped children. As long as we remain within the conventional professional definitions of these terms, not a great deal. However, if we begin to ask: "handicapped in comparison with what norm?", or "exactly what kind of diagnosis are we after?", or "intervention for what purpose?" the previous discussion may well prove relevant. If we are sure that our society will continue to be a competitive one, then anything that affects a child's physical and intellectual skills will make him less competitive and he will automatically become handicapped. However, let us now assume, just for the sake of an argument, that our society is moving in a more humanistic direction. Under these circumstances anything that stands in the way of a child's capacity for compassion and love will become a handicap, rather than whatever lack of skills he may have in other areas. In the first situation we will want to diagnose the child's lack of skills as early as possible, so that we can institute remedial measures to build up his skills. Project Head Start is an example of intervention based on this type of diagnosis. In the last situation we will be concerned more with the child's temperament, ability to tolerate closeness, capacity for object relationships, etc. In other words, the term "handicapped" depends as much on the context in which it is used as all the other labels we apply to children, such as "slow learners", "learning disabilities", "exceptional children", "culturally disadvantaged", etc. In each of these categories we conveniently take the environment for granted and thus can pretend to ourselves that we have discovered entirely new species of homo sapiens. We then get awfully busy domesticating these new species to the world of humans and get discouraged and impatient when and if those strange creatures "just aren't capable" or "just aren't motivated". No mathematician could hope to succeed if he forgot the base of the number system within which he was operating. In relation to our children however, we adults find it perfectly acceptable to forget that we are operating within a context which we ourselves have chosen.

And this is not even all. Modern scientists have learned that anything they observe is changed by the act of observation itself, and that the observed object in turn changes the observer. Thus scientists in the Natural Sciences must take into consideration that they are involved in intimate interactions and transactions with anything they choose to study. However, when adults talk about babies and children, they tend to see their relationship as a one-way relationship, with the adult "bringing up", "training", or "teaching" the child. The underlying assumption here is that the adult expects to change the child but not to be changed by the child. The adult operates on the basis of what he knows to be "good for children" and handles the infant, the toddler, the preschooler, the student on the basis of these preconceived notions. If the child for one reason or another cannot or will not fit into this preconceived mold, professional people are called in to diagnose the "handicap" or the "disability". The diagnosticians, too, have molds which they use to weigh and measure the child and which they subsequently utilize as a basis for "defining the child's needs" and to make recommendations as to how these "needs" may be met. At no time is it clear whether these defined "needs" are indeed the child's needs or the needs of the examiners, the parents, the teachers, or of other adults.

Of course children do have needs in their own right, but we cannot hope to really understand these needs unless we are willing to leave our adult context and to see things from the child's level. Before we discuss these needs, we will briefly have to clarify what is meant by needs. Shevrin and Toussieng (8) some time ago pointed out that the term "needs" is often used, while discussing infants and young children, to refer both to a state of physical deficit (e.g. dehydration) and to the stimulus arising from this deficit (thirst). As not all deficits are associated with stimuli, the dual use of the term "need" can cause much confusion. Shevrin and Toussieng therefore decided to call the deficit "need" and to refer to the stimulus coming from the need as "craving". Cravings act as stimuli on the central nervous system of the infant, and as his psychological development proceeds, the cravings act on the mind of the child so that he himself increasingly becomes aware of them. However, for the stimulus of a craving to have any affect at all, there has to be a receptor. Shevrin and Toussieng suggested that there might be many more receptors than are usually developed. For example, Amrine (1) reported on two women, one of whom could hear electrical impulses, while the other could determine colors exclusively on the basis of touch. It is permissible, then, to set up a hypothesis (as yet not testable) that children come into the world with the potential for developin a number of receptors, and that the way the baby is handled will determine how many of these receptors, if any, will become activated. Correspondingly, certain of the baby's cravings will be understood and met, while others will remain mute and thus unattended.

Unmet cravings may represent so severe an internal strain for certain children, that their central nervous system is forced to react by raising the thresholds for stimulation. When this happens, fewer stimuli of any kind are able to enter, and as the development of the central nervous system, especially the brain, depends on adequate incoming stimulation, this development may be slowed or arrested altogether. As a consequence the infant may seem less responsive to the mother, or may be less able to respond to her comforting. This is liable to have an effect on the mother, which in turn may come between her and the baby, making it harder for her to perceive and meet the baby's underlying cravings. What we have here then is not an innate deficiency in the child, but an unfortunate "fit" between the baby and his environment.

Most parents care quite adequately for their babies and young children, as far as physical needs are concerned. However, when we look at the psychological care, the care is at present often dictated more by preconceived parental notions than by a perception of the child's actual self. This phenomenon crosses all socioeconomic lines. Many years ago Ruth Benedict (2) concluded that parent practice must be viewed not only in terms of the behavior involved, but also in terms of what is communicated to the child by the parental behavior. These subtle communications may or may not fit an individual child's receptors, and therefore may have major consequences for the infant's cravings. It should thus be noted that these subtle parental attitudes, which are conveyed to the babies from birth on, as well as what the baby brings into the world with him in terms of potential receptors, temperament, etc., very much influence what is and what is not possible developmentally.

To complicate matters even further, the same parental behavior can have widely divergent consequences and meanings for different infants and children. Thomas, Chess and Birch (10) have in recent years documented that infants indeed are very different along nine dimensions of temperament they chose to study. They state: " A given pattern of temperament did not, as such, result in a behavioral disturbance. Deviant, as well as normal, development was the result of the interaction between the child with given characteristics of temperament and significant features of his intrafamilial and extrafamilial environment." Their findings confirm that a vicious cycle may develop between the child and his environment if the environment on the basis of cultural or personal assumptions misinterprets the child's inherent characteristics and thus fails to respect them.

Consequently any child care, child rearing or child education which fails to take into consideration the unique characteristics and cravings of unique human beings cannot help but lead to undesirable consequences both for the children and for those who love them or work with them. Since infants are still limited in their ability to put themselves across to the environment, we must do our utmost to sensitize and educate ourselves and other people in the child's environment, so that his characteristics and cravings will not be viewed with disappointment, frustration or even retaliatory anger, but will be viewed positively and responded to accordingly.

In a recently published book, Early Child Care, Lois Murphy ( ) has expressed this very viewpoint. In her chapter, entitled "Individualization of Child Care and Its Relation to Environment" she gives us some useful tables in which she has attempted to include development as to body and self, impersonal objects, persons, affect and language for the first thirty-six months. There is not time to review these tables here, but they are worth studying.

In her closing remarks in that chapter Dr. Murphy mentions that adults far too often treat the baby as a thing. She writes: "The infants feelings are not recognized, and the later consequences of constant early disorganization are not understood. Crying, or even screaming, is not perceived as an expression of distress or disturbance, but simply as a baby's way of letting off steam." She defines good care of infants and young children as care which is based on regarding each child as an individual human being with likes and dislikes, strengths and weaknesses, etc., in unique combinations.

What has been emphasized here is that the assumptions of a political and cultural nature which underlie child rearing and child education at any given time in history automatically facilitate or penalize the development of babies with given combinations of innate characteristics. Rather than thus to artifically create handicaps and then try to deal with these handicaps through remedial measures, it would make more sense for all of us, professionals and parents, to rid ourselves of our biases. Then, and only then, will we be able to see children's needs and cravings as they actually exist. and can help the children grow in a way which makes sense to these children as unique organisms. This requires that we will have to acquire more confidence in nature itself than most of us possess at the present time. As a behavioral scientist I have seen ample evidence in myself and my fellow humans of the many hangups which our upbringing and education have created in us -- so completely needlessly. For all of us who want to help children to grow to be people with a minimum of hangups and internal turmoil we therefore will do well in remembering Piet Hein's (6) "grook":

Our choicest plans
  have fallen through,
our airiest castles
  tumbled over
because of lines
  we neatly drew
and later neatly
  stumbled over.

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"A CONCEPTUAL MODEL FOR THE UNDERSTANDING OF LEARNING PROBLEMS"

Marshall D. Schechter, M.D.*
University of Oklahoma, School of Medicine
Oklahoma City, Oklahoma

A handicapping condition is defined as one in which the child suffers from a disadvantage that makes achievement unusually difficult. The specific achievement I am especially concerned about in this presentation is that of learning in its broadest sense. I am presenting data based upon a concept first elucidated by Dr. James G. Miller that can be utilized to diagnose and treat learning disabilities of varying causatives.

Dr. Miller and his research group at the University of Michigan suggested that many children suffer from "information input underload". He referred to conditions in which there are insufficient or maladaptive stimuli such as in maternal deprivation or in the battered child syndrome, respectively. This concept of "information input underload" is also applicable in genetically caused mental retardation in which the child cannot fully appreciate or utilize a normal level of sensory inputs.

Besides these externally conditioned incorrect learning experiences, there are disorders involving the perceptual systems such as blindness, deafness, and some neurological diseases; disorders involving the motor system due to disease of the central nervous system or to the skeletal system; disorders of the respiratory, cardiac, endocrine, urinary or gastro-intestinal systems - all of which impede performance and a full appreciation of all the sensory stimuli to which children are subjected. High on the list of disease entities which can effect learning are included emotional problems which tend to distort, confuse, and obfuscate even factual information. All these classes of disease entities effect information processing at all ages and at all levels of functioning. The vast majority of such disease processes influence cognition through "information (or sensory) input underload". There are instances of "information input overload" about which Dr. Miller and his colleagues speculated, but about which our own research team from the University of Oklahoma Medical Center has some specific knowledge and which will be discussed later.

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*Professor of Child Psychiatry and Consultant Professor of Pediatrics, The University of Oklahoma School of Medicine

I plan on describing a number of disorders which illustrate the concept of "information input underload" and "information input overload" as a theoretical basis for understanding handicapping conditions and the needed interventions to help diminish the disadvantage to achievement that plague these children and their families. It is my task to formulate handicaps other than mental retardation or emotional disorders under the rubric of this theoretical base and formulate thusly methods for proper intersessions. Although I am excluding emotional disorders and mental retardation, they can also be understood, I believe, under the same theoretical framework.

We have learned that in order to function well, the brain needs a constant level of stimulation. In those instances where inadequate or inappropriate stimuli occur, there can be seen a direct affect on hormonal production with subsequent failure to develop normally. Powell and his co-workers at Johns Hopkins brought in a group of children, who were all diagnosed "failure to thrive". Growth hormone assays from these children revealed a lack of this hormone in the circulating blood, potentially indicating a diagnosis of panhypopituitarism (for all practical purposes, a lack of any anterior pituitary gland function). The team at Johns Hopkins did not administer purified growth hormone to make their children grow taller or put on weight. Rather they had warm, interested, stimulating nurses play with the children, feed them, wash them, rock them - in other words, take on a motherly role (i.e. properly and adequately stimulating). After a brief time on this regimen, the children began to grow and put on weight. When again the hormones were assayed, lo and behold, their pituitary glands were functioning. This unfortunate experiment in nature firmly established the complimentary relationship between organic brain development and the necessary emotional stimulation coming from the outside. Similarly, adults whose personalities and central nervous systems are fully developed and functioning perfectly, when voluntarily placed in an experiment wherein visual, auditory and kinesthetic stimuli have been withdrawn, quickly develop hallucinations and ideas of persecution. These, and other experiments, demonstrate the importance - nay, need - for a constant level of sensory input in order to develop, and then maintain normal central nervous system performance. Therefore, any circumstance that interferes with an understanding or appreciation of incoming stimuli and/or interferes with correct response patterns can create adverse learning patterns which prevent mastery over the inner self as well as prevent mastery in regard to the individual functioning in relationship to their family or society.

Deficits in the visual area create enormous problems. The congenitally blind are constantly having difficulty with understanding reality. The eyes are the leading and most effective organs in evaluating and testing that which is safe and that which is not. The eyes are also the leading organs in the process of imitation and identification, the fundamental method of personality development. Because of difficulties in identifying with people, there is a looseness of thought processes and a difficulty in emotional control in the blind. Blind children often develop automatisms or blindisms which are ways these children attempt to get more stimulation into their brain, since, without the sense of sight, they suffer from sensory input underloads. The blind child is preoccupied constantly with a need to locate himself in space and to avoid that which might be painful. Therefore, energies that are ordinarily available for learning are bound defensively in an everpresent searching for security.

In the last few years, we have identified a number of children whose vision seems intact (because the orbit of the eye is healthy) yet react as if they couldn't see properly. Glasses do not help these children who cannot retain visual images or who have difficulty with spatial relationships or in picking out salient figures from a busy background. These are the children we call perceptually handicapped with a visual-motor deficit. These children are most often not identified until school has imposed the need to learn the geometric symbols we call letters and numbers. Retrospectively, parents do recall, at times, an awkwardness or clumsiness, emotional lability and frequently misjudgments and misunderstandings of life's events. Parents and teachers report in these children, besides their learning problems (dyslexia, dyscalculia, etc.), how tension (pleasurable or unpleasurable) adversely affect their information processing and their moods. Living with them is like "living on a roller coaster all the time". The poem about the girl with the curl in the middle of her forehead, many parents feel, was written expressly about their child with a visual perceptual handicap. In effect, the capacity to organize and remember the significant vital portions of their world is interfered with to the extent that some authors feel these children with their personality distortions are more prone to severe emotional problems. Our Child Psychiatry Outpatient Clinic at the University of Oklahoma has had referred a number of cases of depression and suicidal attempts, including a number under age 10, because the children, aware of their deficits, had tried to overcome them and yet failed each time. They looked upon repeated failures as evidence of an inherent badness, their "mark of Cain", which represented another reason for their self-destructive tendencies. The primarily organic basis for learning difficulties becomes enormously compounded by emotional problems wherein motivational factors play a large role.

From the work of Fraiberg and Burlingame, it is evident that early interventions utilizing all other input systems is essential for proper physical and emotional development of the totally blind child. There must be an increase in speaking to the child, touching and stroking him and helping kinesthetically and proprioceptively the child to learn body parts and position in space. The early recognition of the child with visual motor handicaps when gross visual acuity is not in question is much more difficult as is the assigning of proper treatment modes.

There are two basic methods for screening for visual handicaps - both of which seem impractical with the burdens of other responsibilities health professionals currently carry and with the amount of money currently available for mass approaches. However, both methods are feasible and fall into a series of recommendations made by the Joint Commission for Mental Health of Children. First, all high risk children, e.g. prematures, toxemias of pregnancy, postmaturity, etc., should be tracked and followed in their development with special attention to sensory-motor training directed at enhancing visual pathway functioning. A national or regional birth registry is imperative. Secondly, massive attempts should be made to screen all 4 and 5 year old children so that, hopefully, preschool programs can bring these handicaps into line.

There are major complications in diagnosing and assigning treatment methods with regard to handicapped children - differential rates of maturation of cerebral tissue, the uncertainty of development of alternate cortical pathways and mainly the fact that in children the central nervous system is in statu nacendi. A few years ago when I spoke to Marianne Frostig about screening devices to evaluate preschool children, she felt that none were too reliable in regard to later functioning. It was her recommendation that if any deficits were demonstrable, teachers should "shot gun" approaches in order to effect all sensory systems. For the past few years, Nelda Ferguson, Ph.D., of the Oklahoma City School System, together with Gloria Rogers, physician to the Oklahoma City School System, Ellidee Thomas, M.D., Director of the Child Study Center at the University of Oklahoma Medical Center, have conducted a screening of children scheduled to enter the first grade the following year. They administer the Vane Kindergarten Screening Test, a brief neurological examination and a teacher questionnaire where the teacher can define the child's level of maturity. Children identified as high risk for learning are placed in special classes with the same teacher for at least two years. During this program the children are given sensory-motor training with little emphasis on academics such as reading or spelling. It would appear that if help is given in these first 2 years, 82% of the handicapped can maintain grade level thereafter. If treatment is instituted in the third grade, the percentage drops to 46%, to 18% if treated in the fifth grade and 6% if treated in the sixth grade.

In a similar desire to identify problem children early, our Division of Child Psychiatry at the University of Oklahoma Medical Center has undertaken screening of children in Head Start programs. Under the supervision and training of one of our staff psychologists, a corps of volunteers has been developed to administer the WPPSI and the Frostig. To date about 300 such children have been evaluated. This program not only offers an opportunity to get information on children that can be followed longitudinally but offers a method, through the use of a superb group of volunteers, to utilize "mental health extenders" for service and even research projects. On the basis of some of our test results, it would appear possible that black children might have some greater difficulty with figure-ground relationships than do white children. Because this was noted from some of the test materials, two research projects have been spawned. The first is an investigation of opth ophthalmologic - retinoscopic photographs to see if increased retinal pigmentation might be related to lessened ability to select out salient features from background material. The second project has to do with evaluating the effect of test and tester bias in potentially creating situations which seemingly lower IQ scores from different cultural, socio-economic, as well as ethnic groups. The children identified by our evaluations as potentially high risk are given special care in their own Head Start nurseries, as well as in one sponsored by our own Division of Child Psychiatry. These same children are, in effect, tagged for special followup once they enter into the City school system so that we can better determine which interventions are best for which types of disorders.

The child who is deaf or mute or both has particular problems with controls of ideas and feelings. The development of speech is essential to the development of secondary process thinking. It is the shift from primary process thinking (which is illogical, instinctual, timeless, with apparent contradictions appearing side by side, utilizing projection and ideas of reference as primary defense mechanisms) and secondary process thinking (which is logical, orderly, with contradictory feelings giving rise to discomfort, utilizing repression and denial as primary defense mechanisms) which is made possible through the formation of language. Internal and expressive speech can be seen as one of the elemental forces in civilizing the instinctual life. Those children who do not have adequate speech find controls of feeling much more difficult. The deaf have a tendency toward suspiciousness that borders at times on paranoia. Early institution of verbal training (assuming the child has the central nervous system capabilities), lip reading and sign language enables the child to develop a system of communicating with others and also to develop an internal system of communication. Normal children talk to themselves. The deaf and mute need similar methods of internally involving and elaborating ideas. The deaf infant who babbles as do others, stops babbling because there is no intrinsic feedback system to reinforce external inputs from older individuals in his environment. It is common knowledge that healthy 8 to 10 month old infants know a great deal about what is said to them without a clear ability to speak back. It is this receptive language buildup that ultimately results in expressive language formation. In the deaf (and even more the mute) the critical period for development of a language system is passed without making adequate use of that time span in which communication systems are in their most formative stages. Research methods (e.g.) utilizing evoked potential electro-encephalograms should be expanded to define neural deafness as early as possible to permit parents and teachers to institute other systems of sensory stimulation and thusly to encourage language formation.

Children with musculo-skeletal or neurological disabilities are unable to explore the world, the learn the "feel" (i.e. proprioceptively or kinesthetically) of their environment. These children are unable to master aggressive feelings as the muscular system is the primary method whereby these affects are discharged. Distortions in personality formation occur with the tendency to utilize aggressive energies against themselves rather than to actively master their environment or use the energies for academic learning. It was noted that children who had been motorically active and were placed in traction or casts, immediately became depressed.

Their interests in the external world markedly decline while their fantasy life increased correspondingly. Those old enough to be in school could not attend to studies and therefore performed considerably below their previous levels of functioning. It was when the depression was recognized that boxing bags were placed on their beds and the children were given boxing gloves and encouraged to hit the bag hard and often. With forcible motoric discharge, the depression lifted and the children were available for all kinds of learning. With sensory input underloading, complicated by a flooding of aggressive drives, the child is unable to attend to outside influences. Therefore, every attempt should be made to externalize aggression through whatever large muscle groups are available. The complication imposed by certain respiratory and cardiac diseases regarding inhibition of motoric discharge is the potential threat to consciousness and life itself that movement might cause. These children treat themselves as fragile eggshells whose every move might result in a crushing death. The everpresent anxiety with any action brings all their energies toward the goal of preserving life, and in this sense, any learning that takes activity - even if it is only mental activity - is blocked as it is actually and symbolically antithetical to existence. These children must be encouraged to early verbal development and to discharge aggression through speech.

The cases discussed up to this point are, in the main, those related to information input underload. There are, of course, a number of these children who are extraordinarily sensitive and tend to withdraw with any untoward movement toward them. There is, however, a condition that is the very paradigm of information input overload. It is an early infantile autism that the children develop psychological defenses against any and all sensory inputs. It appears that these children suffer from an inability to filter stimuli with the net result that the autistic child is constantly flooded by sensations. To control being overwhelmed, the child defends himself by self-stimulating devices and involvement with inanimate rather than human objects. Since these children are identified by their third year (many of them shortly after birth), there is a need to carefully and slowly grade the stimuli presented to this type of child. It appears to us that similar to the decreasing results of educating the child with a visual handicap, the autistic child must be identified early and given an opportunity to develop in a perceptively deprived environment with stimulation slowly added as tolerated.

In the same fashion, children diagnosed as having minimal cerebral dysfunction often are unable to adequately focus on and retain properly various stimuli. They, too, are constantly flooded with information along so many input channels that they are unable to decode the messages presented. These children also represent a category of information input overloading and need, as much as possible, a single input channel for stimuli to react to at a time.

This presentation was aimed at helping children with handicaps in their mechanisms of adjustment. To liberally quote Miller, the identified errors in recording information properly which he and his colleagues have cited are (a) temporary non processing of information (b) incorrect processing of information in which the system might return to normal functioning later (c) delay in responding to information with consequent overlapping of information still being processed (d) neglect in processing some information presented while processing other information (e) non-discrimination of information where information processed is responded to in a general way rather than specifically i.e. instead of reporting "I see yellow", saying "I see a light color" or "I see a color". (f) processing information through a number of channels simultaneously creating a situation of decentralization and defusion of attention and (g) total escape from the task as in reversion to fantasy. All of these errors in information processing can indeed make achievement more difficult.

Each individual, whether normal or handicapped, has his own special learning track - his particular input system that processes information more readily than other sensory input systems. Some of us are primarily auditory learners while others are visual learners or kinesthetic learners or we utilize combinations of these sensory modalities. Diagnostic testing should be undertaken early in kindergarten or first grade to determine which method of teaching is best for each child. Classes should be structured so that the auditory learner gains most information along auditory lines, the visual learner gains most information along visual lines, etc., etc.

By defining early the most relavent sensory input system for each child, again whether normal or with specific handicaps, methods can be devised and prescriptions written which could increase the rate of learning and help especially the handicapped to develop alternate methods for more adequate academic performance. In utilizing this neuro-psychological model of sensory input underload or overload and sensory system

system preference, the teacher can properly be seen as a diagnostician, a therapist and a truly effective ally in helping children to learn.